

T

A MANUAL
OF THE
MORE COMMON
HERBACEOUS PLANTS

OF
QUEBEC AND ONTARIO
FOR USE IN CONNECTION WITH GROOM'S BOTANY.

(ADAPTED FROM GRAY'S MANUAL.)

BY
D. P. PENHALLOW, B.Sc.

TORONTO:
THE COPP, CLARK COMPANY, LIMITED.

1899.

Entered according to Act of the Parliament of Canada, in the year one thousand eight hundred and ninety-nine, by THE COPP, CLARK COMPANY, LIMITED, Toronto, Ontario, in the Office of the Minister of Agriculture.

ANALYTICAL KEY TO THE ORDERS.

BRANCH I.—SPERMATOPHYTA.

CLASS I. ANGIOSPERMÆ. Pistil consisting of a closed ovary.
Cotyledons only two.

SUB-CLASS I. DICOTYLEDONS or EXOGENS. Stems with
bark, wood and pith; leaves netted-veined; embryo with two
cotyledons; flower on the plan of four or five.

DIVISION I. POLYPETALÆ: the calyx and corolla both present;
the latter of *separate* petals.

A. *Stamens numerous, at least more than 10, and more than twice the
sepals or lobes of the calyx.*

1. *Calyx entirely free and separate from the pistil or pistils.*

Pistils numerous, separate, but concealed in a hollow receptacle.	PAGE
Leaves alternate, with stipules. Rosa, in ROSACEÆ	76
Pistils more than one, separate, not enclosed in the receptacle.	
Stamens inserted on the calyx, distinct. ROSACEÆ	66
Stamens united with the base of the petals, monadelphous.	
. MALVACEÆ	40
Stamens inserted on the receptacle.	
Filaments longer than the anther.	
Flowers dioecious; twiners with alternate leaves.	
. MENISPERMACEÆ	11
Flowers perfect; if climbers, the leaves opposite.	
Leaves not peltate; petals deciduous. RANUNCULACEÆ	2
Leaves peltate; petals persistent.	
. Brasenia, in NYMPHÆACEÆ	14
Pistils several, their ovaries cohering in a ring around an axis.	
. MALVACEÆ	40
Pistils strictly one as to the ovary; the styles or stigmas may be several.	
Leaves punctate under a lens with transparent dots.	
. HYPERICACEÆ	38

- Leaves not punctate with transparent dots.
- Ovary simple, 1-celled, 2-ovuled. ROSACEÆ 66
- Ovary simple, 1-celled, with one parietal many-ovuled placenta.
- Leaves 2-3-ternately compound or dissected.
- RANUNCULACEÆ 2
- Ovary compound, 1-celled, with a central placenta.
- PORTULACACEÆ 37
- Ovary compound, 1-celled, with two or more parietal placentæ.
- Calyx caducous ; juice milky or colored. PAPAVERACEÆ 16
- Calyx persistent, of 3 or 5 sepals. CISTACEÆ 28
- Ovary compound, several-celled.
- Calyx valvate in the bud, and
- Persistent ; stamens monadelphous ; anthers 1-celled.
- MALVACEÆ 40
- Deciduous ; anthers 2-celled TILIACEÆ 41
- Calyx imbricated in the bud, persistent.
- Aquatic or marsh herbs ; ovaries many,
- On 5 placentæ in the axis. SARRACENIACEÆ 16
- On the 8-30 partitions. NYMPHÆACEÆ 13
2. *Calyx more or less coherent with the surface of the (compound) ovary.*
- Ovary 8-30 celled ; ovules many, on the partitions ; aquatic.
- NYMPHÆACEÆ 13
- Ovary 10-celled ; cells 1-ovuled. Amelanchier, in ROSACEÆ 80
- Ovary 2-5-celled.
- Leaves alternate, with stipules. Pomeæ, in ROSACEÆ 67
- Leaves opposite, without stipules Some SAXIFRAGACEÆ 80
- Ovary one-celled, with the ovules rising from the base.
- PORTULACACEÆ 37
- B. Stamens of the same number as the petals and opposite them.**
- Pistils 3-6, separate ; flowers diceious ; woody vines.
- MENISPERMACEÆ 11
- Pistil only one.
- Ovary one-celled ; anthers opening by uplifted valves.
- BERBERIDACEÆ 12
- Ovary one-celled ; anthers not opening by uplifted valves.
- Style and stigma one ; ovules more than one. PRIMULACEÆ 137
- Style 1 ; stigmas 3 ; sepals 2 ; ovules several. PORTULACACEÆ 37

Ovary 2-4-celled.

Calyx-lobes minute or obsolete ; petals valvate. VITACEÆ 49

Calyx 4-5-cleft, valvate in the bud ; petals involute. RHAMNACEÆ 48

C. *Stamens not more than twice as many as the petals, when of just the number of the petals then alternate with them.*

1. *Calyx free from the ovary, i.e., the ovary wholly superior.*

* *Ovaries 2 or more, separate.*

Stamens united with each other, and with a large and thick stigma common to the two ovaries. ASCLEPIADACEÆ 141

Stamens unconnected, on the receptacle, free from the calyx.

Leaves punctate with pellucid dots. RUTACEÆ 45

Leaves not pellucid-punctate.

Herbs, not fleshy. RANUNCULACEÆ 2

Herbs, with thick fleshy leaves. CRASSULACEÆ 85

Stamens unconnected, inserted on the calyx.

Just twice as many as the pistils (flower symmetrical). CRASSULACEÆ 85

Not just the number or twice the number of the pistils.

Leaves without stipules. SAXIFRAGACEÆ 80

Leaves with stipules. ROSACEÆ 66

** *Ovaries 2-5, somewhat united at the base, separate above.*

Leaves punctate with pellucid dots. RUTACEÆ 45

Leaves not pellucid-punctate.

Shrubs or trees with opposite leaves. SAPINDACEÆ 51

Terrestrial herbs ; the carpels fewer than the petals. SAXIFRAGACEÆ 80

*** *Ovaries or lobes of ovary 3 to 5, with a common style.*

. GERANIACEÆ 42

**** *Ovary only one, and*

+ *Simple, with one parietal placenta.* LEGUMINOSÆ 56

++ *Compound, as shown by the number of cells, placenta, styles, or stigmas.*

Ovary one-celled.

Corolla irregular ; petals 4 ; stamens 6. FUMARIACEÆ 17

Corolla irregular ; petals and stamens 5. VIOLACEÆ 29

Corolla regular or nearly so.

Ovule solitary ; shrubs or trees ; stigmas 3. ANACARDIACEÆ 54

Ovules solitary or few ; herbs. Some anomalous	CRUCIFERÆ	20
Ovules more than one, in the centre or bottom of the cell.		
Petals not inserted on the calyx. . .	CARYOPHYLLACEÆ	32
Ovules several or many, on two or more parietal placentæ.		
Leaves punctate with pellucid and dark dots.	HYPERICACEÆ	38
Leaves beset with reddish gland-tipped bristles.	DROSERACEÆ	86
Leaves neither punctate nor bristly-glandular.		
Sepals 5, very unequal or only 3. . .	CISTACEÆ	28
Sepals and petals 4 ; stamens 6. Anomalous	CRUCIFERÆ	20
Sepals and petals 5 ; stamens 5 or 10.		
Ovary sessile. 	SAXIFRAGACEÆ	80
Ovary 2-several-celled.		
Flowers irregular.		
Anthers opening at the top,		
Six or eight and 1-celled ; ovary 2-celled, 2-ovuled.		
. 	POLYGALACEÆ	55
Ten and 2-celled ; ovary 5-celled.		
. 	Rhododendron, in ERICACEÆ	133
Anthers opening lengthwise.		
Stamens 5-8 or 10, and petals hypogynous, or nearly so.		
Ovary 3-celled. 	SAPINDACEÆ	51
Ovary 5-celled. 	Impatiens, etc., in GERANIACEÆ	44
Flowers regular or nearly so.		
Stamens neither just as many nor twice as many as the petals,		
Triadelphous ; petals 5. 	HYPERICACEÆ	38
Tetradynamous (or rarely only 2 or 4) ; petals 4 ; pungent		
herbs. 	CRUCIFERÆ	20
Distinct and more numerous than the petals.	SAPINDACEÆ	51
Stamens just as many or twice as many as the petals.		
Ovules and seeds only 1 or 2 in each cell.		
Herbs ; flowers perfect and symmetrical.		
Cells of the ovary as many as the sepals, etc.		
. 	GERANIACEÆ	42
Shrubs or trees.		
Leaves palmately veined and fruit 2-winged, or pinnate		
and fruit a berry. 	SAPINDACEÆ	51
Leaves pinnately veined, simple, not punctate.		
Calyx not minute ; pod colored, dehiscent ; seeds		
enclosed in a pulpy aril. . .	CELASTRACEÆ	47
Calyx minute ; fruit a berry-like drupe.	ILICINEÆ	46
Ovules (and usually seeds) several or many in each cell.		

20	Stipules between the opposite and compound leaves (but they are caducous).	Staphylea, in SAPINDACEÆ	53
32	Stipules none when the leaves are opposite.		
38	Stamens 10, monadelphous at the base. Leaflets 3, inversely heart-shaped.	Oxalis, in GERANIACEÆ	44
86	Stamens distinct, free from the calyx.		
	Style 1, undivided.	ERICACEÆ	127
28	Styles 2-5, separate.	CARYOPHYLLACEÆ	32
20	Stamens distinct, inserted on the calyx.		
	Styles 2 (or 3), or splitting into 2 in fruit. SAXIFRAGACEÆ		80
80	2. <i>Calyx-tube adherent to the ovary, at least to its lower half.</i>		
	Tendrill-bearing and often succulent herbs.	CUCURBITACEÆ	91
	Not tendrill-bearing.		
	Ovules and seeds more than one in each cell.		
	Ovary 1-celled, many-ovuled from the base.	PORTULACACEÆ	37
55	Ovary 1-celled, with 2 or 3 parietal placentæ.	SAXIFRAGACEÆ	80
	Anthers not opening by pores.		
133	Stamens on a flat disk which covers the ovary.		
	. . . . .	CELASTRACEÆ	47
	Stamens inserted on the calyx.		
51	Eight or four (rarely five); style 1.	ONAGRACEÆ	88
44	Five or ten; styles 2-3, distinct.	SAXIFRAGACEÆ	80
	Ovules and seeds only one in each cell.		
	Stamens 10 or 5 (instead of many),—		
38	. . . . . rarely in Cratægus, in ROSACEÆ		79
	Stamens 2 or 8; style 1; stigma 2-4-lobed; herbs.		
20	. . . . .	ONAGRACEÆ	88
51	Perfect stamens 4; styles 2; shrub.	HAMAMELIDEÆ	87
	Stamens 4; style and stigma 1; chiefly shrubs.	CORNACEÆ	100
	Stamens 5; flowers in umbels, or rarely in heads.		
	Fruit dry, splitting in two at maturity; style 2.		
	. . . . .	UMBELLIFERÆ	93
2	Fruit berry-like; styles 2-5, separate or united.		
	. . . . .	ARALIACEÆ	98
	DIVISION II. GAMOPETALÆ calyx and corolla both present; the latter with its petals united more or less into one piece.		
	A. <i>Stamens more numerous than the lobes of the corolla.</i>		
7	Ovary 1-celled with one parietal placenta.	LEGUMINOSÆ	56
3	Ovary 1-celled with two parietal placentæ.		
	. . . . .	Adlumia, etc., in FUMARIACEÆ	18

- Ovary 2-celled with a single ovule in each cell. POLYGALACEÆ 55
- Ovary 3-many-celled.
- Stamens free or nearly free from the corolla ; style single.
 ERICACEÆ 127
- Stamens free from the corolla ; styles 5. Oxalis, in GERANIACEÆ 44
- Stamens inserted on the base or tube of the corolla.
- Filaments monadelphous ; anthers 1-celled, kidney-shaped.
 MALVACEÆ 40
- Filaments in pairs at each sinus ; anthers 1-celled.
 CAPRIFOLIACEÆ 101
- B. *Stamens (fertile ones) as many as the lobes of the corolla and opposite them.*
- Ovary 1-celled ; pod several-many-seeded ; style 1. PRIMULACEÆ 137
- C. *Stamens as many as the lobes of the corolla and alternate with them, or fewer.*
1. *Ovary adherent to the calyx-tube (inferior).*
- Tendril-bearing herbs ; anthers often united. CUCURBITACEÆ 91
- Tendrils none.
- Stamens united by their anthers into a ring or tube.
- Flowers in an involucrate head. COMPOSITEÆ 108
- Flowers separate, not involucrate ; corolla irregular.
 LOBELIACEÆ 125
- Stamens separate, free from the corolla or nearly so, as many as its lobes ; stipules none ; juice milky. CAMPANULACEÆ 126
- Stamens separate, inserted on the corolla,
 Four or five ; leaves opposite or whorled.
- Ovary 2-5-celled.
- Leaves whorled and without stipules. } RUBIACEÆ 105
- Leaves opposite or whorled, and with stipules. }
- Leaves opposite without stipules (petioles sometimes with stipule-like appendages). CAPRIFOLIACEÆ 101
2. *Ovary free from the calyx (superior).*
- * *Corolla irregular ; stamens (with anthers) 4 and didynamous, or only 2.*
- Ovules and seeds solitary in the (1-4) cells.
- Ovary 4-lobed, the style rising from between the lobes. LABIATÆ 164
- Ovary not lobed, the style from its apex. VERBENACEÆ 163
- Ovules numerous or at least as many as 2 in each cell.

- 55 Ovary and pod 1-celled,
With 2 or more parietal very many-seeded placentæ; stamens 4
OROBANCHACEÆ 161
- 127 Ovary and pod 2-celled; placentæ in the axis.
44 Seeds rarely few, not on hooks, with albumen.
SCROPHULARIACEÆ 154
- * * Corolla somewhat irregular; stamens (with anthers) 5.
- 40 Stamens free from the corolla; anthers with their cells opening by
a hole or chink at the top. Rhododendron, in ERICACEÆ 133
- 101 Stamens inserted on the corolla.
Ovary not lobed; pod many-seeded.
Filaments or some of them woolly.
Verbascum, SCROPHULARIACEÆ 156
- 137 * * * Corolla regular.
† Stamens as many as the lobes of the corolla
- Ovaries 2, separate; their
Stigmas and sometimes styles united into one.
- 91 Filaments distinct; pollen in ordinary grains. APOCYNACEÆ 140
Filaments monadelphous; pollen in masses. ASCLEPIADACEÆ 141
- Ovary one, but deeply 4-lobed around the style.
- 108 Leaves alternate. BORRAGINACEÆ 147
125 Leaves opposite. Mentha, in LABIATÆ 166
- Ovary one; not deeply lobed,
One-celled, one-ovuled, becoming an achene. PLANTAGINACEÆ 171
- 126 One-celled, with ovules parietal or on 2 parietal placentæ.
Leaves (or in Menyanthes three leaflets) entire. GENTIANACEÆ 143
Leaves toothed, lobed, or pinnately compound.
HYDROPHYLLACEÆ 146
- Two to ten-celled.
- 105 Leaflets parasitic twining plants. Cuscuta, in CONVULVULACEÆ 152
Leaves when opposite without stipules.
- 101 Stamens free from the corolla or nearly so; style 1. ERICACEÆ 127
Stamens almost free from the corolla; style none. ILICINEÆ 46
Stamens inserted on the tube of the corolla,
Four; pod 2-celled, circumscissile. PLANTAGINACEÆ 171
Four; ovary 2-4-celled; ovules solitary. VERBENACEÆ 163
Five or rarely more.
- 164 Fruit of two or four seed-like nutlets. BORRAGINACEÆ 147
163 Fruit a few-seeded pod.
Sepals 5; styles 1 or 2, entire or 2-cleft; seeds large,
only one or two in a cell. CONVULVULACEÆ 150

- Fruit a many-seeded pod or berry.
 Style single. SOLANACEÆ 152
 †† *Stamens fewer than the lobes of the corolla.*
- Stamens 4, didynamous.
 Ovary 2-4-celled; the cells 1-seeded. VERBENACEÆ 163
 Stamens only 2 with anthers; ovary 4-lobed.
 Lycopus, in LABIATÆ 167
- Stamens 2, rarely 3; ovary 2-celled.
 Low herbs; corolla scarious, withering on the pod.
 PLANTAGINACEÆ 171
 Herbs; corolla rotate, or somewhat funnelform, and slightly
 irregular. Veronica, in SCROPHULARIACEÆ 158

DIVISION III. APETALÆ: corolla (and sometimes calyx)
 wanting.

A. *Flowers not in catkins.*

1. *Ovary or its cells containing many ovules.*

- Ovary and pod inferior (*i.e.*, calyx-tube adherent to the ovary),
 Six-celled; stamens 6-12. ARISTOLOCHIACEÆ 174
 One-celled, with parietal placentæ.
 Chrysosplenium, in SAXIFRAGACEÆ 83
- Ovary and pod wholly naked (there being no calyx),
 Two-celled, 2-beaked; flowers capitate; tree. HAMAMELIDEÆ 87
- Ovary and pod superior, *i.e.*, free from the calyx.
 Two-celled or one-celled; placentæ central.
 Stamens inserted on the receptacle or the base of the calyx,
 Opposite the sepals when of the same number.
 CARYOPHYLLACEÆ 32
- One-celled, with one parietal placenta. }
 Ovaries 2 or more, separate, simple. } RANUNCULACEÆ 2

2. *Ovary or its cells containing only 1 or 2, rarely 3 or 4, ovules.*

* *Pistils more than one, and distinct or nearly so.*

- Stamens inserted on the calyx; leaves with stipules. ROSACEÆ 66
 Stamens inserted on the receptacle.
 Leaves punctate with pellucid dots. Xanthoxylum, in RUTACEÆ 46
 Leaves not dotted.
 Calyx present, and usually colored or petal-like.
 RANUNCULACEÆ 2

** *Pistil one, either simple or compound.*

- 152 Ovary partly inferior, the calyx coherent to its lower half, 2-celled ;
styles 2 ; stamens many. HAMAMELIDÆ 87
- Ovary wholly inferior (in perfect or pistillate flowers).
Mostly woody plants ; style or stigma one, entire ; ovary 1-celled.
163 Stigma terminal, with or without a style.
Not parasitic above ground ; anthers on filaments.
167 SANTALACEÆ 175
- Ovary really free from the calyx, but permanently invested by its
tube, or the base of it, so as to seem inferior.
171 Herbs, with the calyx colored like a corolla.
Leaves alternate, pinnate. Poterium, in ROSACEÆ 76
- 158 Ovary plainly free from the calyx, which is sometimes wanting.
Stipules (ocreae) sheathing the stem at the nodes.
Herbs ; calyx present and commonly petal-like. POLYGONACEÆ 173
Stipules not sheathing the stem, or none.
Not aquatics, herbs.
- Ovary 10-celled ; berry 10-seeded. PHYTOLACCACEÆ 172
Shrubs or trees.
- 174 Ovules a pair in each cell of the ovary.
Fruit 2-celled, a double samara. Acerinæ, in SAPINDACEÆ 51
- 83 Ovules single in each cell of the
Three-celled ovary ; leaves broad. RHAMNACEÆ 48
- 87

SUB-CLASS II. MONOCOTYLEDONS or ENDOGENS.

Stems without distinction of pith, wood and bark ; leaves
usually parallel veined ; embryo with one cotyledon ;
flowers on the plan of three.

- 32 A. SPADICEOUS DIVISION. *Flowers aggregated on a spadix or*
2 *fleshy axis, or sometimes scattered, destitute of calyx and corolla*
(excepting some Araceæ and Naiadaceæ, where, however, they
are on a spadix), and also without glumes (husky scales).
Leaves sometimes with netted veins.

66 Terrestrial or marsh plants ; leaves mostly with a distinct netted-
46 veined blade, petioled. ARACEÆ 198

- B. PETALOIDEOUS DIVISION. *Flowers not collected on a spadix,*
2 *furnished with floral envelopes (perianth) answering to calyx*
or to both calyx and corolla, either herbaceous or colored and
petal-like.

1. *Perianth adherent to the whole surface of the ovary.*

Flowers perfect ; ovules and seeds usually numerous.

Stamens only one or two ; flower irregular, gynandrous.

. ORCHIDACEÆ 177

Stamens three.

Anthers extrorse, opening lengthwise. IRIDACEÆ 189

2. *Perianth wholly free from the ovary.*

Pistil one, compound (cells or placentæ mostly 3).

Perianth not glumaceous or chaffy ; flowers not in dense heads.

Stamens 6 (in *Maianthemum* 4), similar and perfect.

Terrestrial, not rush-like ; seeds with albumen.

Perianth of similar divisions or lobes, mostly colored.

Perianth of 3 foliaceous and green sepals } LILIACEÆ 190

and 3 colored withering-persistent petals.

. Trillium in }

SIGNS COMMONLY USED.

° ' " The sign of degrees (°) is used for feet, of minutes (') for inches, of seconds (") for lines—the line being the twelfth part of an inch, and very nearly equivalent to two millimetres.

μ In microscopic measurements, the conventional sign for the mikron or the one-thousandth part of a millimetre = one two-thousandth part of a line.

♂ Bearing only stamens or antheridia.

♀ Pistillate or bearing archegonia.

? A mark of doubt.

! A mark of affirmation or authentication.

Figures or words separated by a short dash (–) indicate the extremes of variation, as "5–10" long, few–many-flowered," i.e., varying from 5 to 10 lines in length, and with from few to many flowers.

h
h
A

APPENDIX.

BRANCH I.—SPERMATOPHYTA.

PLANTS bearing flowers, with stamens and pistils, and producing seeds, which contain an embryo.

CLASS I. ANGIOSPERMÆ.

Pistil consisting of a closed ovary, which contains the ovules and forms the fruit. Cotyledons only two.

SUB-CLASS I. DICOTYLEDONS OR EXOGENS.

Stems formed of bark, wood, and pith; the wood forming a layer between the other two, increasing, when the stem continues from year to year, by the annual addition of a new layer to the outside, next the bark. Leaves netted-veined. Embryo with a pair of opposite cotyledons. Flowers having their parts usually in five or fours.

DIVISION I. POLYPETALÆ.

Floral envelopes consisting of both calyx and corolla; the petals not united with each other. (Several genera or species belonging to Polypetalous Orders are destitute of petals, or have them more or less united.)

A. THALAMIFLORÆ. Stamens and petals hypogynous (free both from the calyx and from the superior ovary), upon a usually narrow receptacle (not glandular nor discoid, sometimes stipe-like). (Stamens and petals upon the partly inferior ovary in some Nymphæacææ.) Apetalous flowers occur in the Ranunculacææ and Caryophyllacææ.

ORDER 1. **RANUNCULACEÆ** (CROWFOOT FAMILY).

Herbs or some woody plants, with a colorless and usually acrid juice, polypetalous, or apetalous with the calyx often colored like a corolla, hypogynous; the sepals, petals, numerous stamens, and many or few (rarely single) pistils all distinct and unconnected.—Flowers regular or irregular. Sepals 3–15. Petals 3–15, or wanting. Stamens indefinite, rarely few. Fruits either dry pods, or seed-like (achenes), or berries. Seeds anatropous (when solitary and suspended the rhaphe dorsal), with hard albumen and a minute embryo.—Leaves often dissected, their stalks dilated at the base, sometimes with stipule-like appendages. (A large family, including some acrid-narcotic poisons.)

Synopsis of the Genera.

Tribe I. CLEMATIDÆ. Sepals normally 4, petal-like, valvate in the bud, or with the edges bent inward. Petals none, or small. Achenes numerous, tailed with the feathery or hairy styles. Seed suspended.—Leaves all opposite.

1. **Clematis.** Climbing by the leafstalks, or erect herbs.

Tribe II. ANEMONÆ. Sepals 3–20, often petal-like, imbricated in the bud. Stamens mostly numerous. Achenes numerous or several, in a head or spike. Herbs, never climbing; leaves alternat: or radical, the upper sometimes opposite or whorled.

* Petals none (rarely some staminodia). Seed suspended.

† All but the lower leaves opposite or whorled. Peduncles 1-flowered.

2. **Anemone.** Involucre leaf-like, remote from the flower. Leaves compound or dissected. Pistils very many.

3. **Hepatica.** Involucre close to the flower, of 3 oval bracts, calyx-like. Leaves radical, simple and lobed. Pistils several.

4. **Anemonella.** Stigma terminal, broad and flat. Radical leaves and involucre compound. Peduncles umbellate. Achenes 4–15, many-ribbed.

†† Leaves alternate, compound. Flowers paniced, often diœcious.

5. **Thalictrum.** Sepals usually 4, petal-like or greenish. Achenes few.

* * Petals evident. Sepals usually 5. Achenes many.

6. **Ranunculus.** Petals 5, yellow or white, with a scale or gland at base. Achenes capitate. Seed erect.

Tribe III. HELLEBOREÆ. Sepals imbricated in the bud, rarely persistent, petal-like. Petals often nectariferous or reduced to staminodia or none. Pods (follicles) or berries (in n. 10) few, rarely single, few-many-seeded.—Leaves alternate.

* Ovules and commonly seeds more than one pair. Herbs.

† Flowers regular, not racemose. Petals inconspicuous nectaries or slender or none. Sepals tardily deciduous.

7. **Caltha.** Petals none. Sepals broad, yellow. Leaves kidney-shaped, undivided.

8. **Coptis.** Petals 5–6, small, hollowed at apex, white. Pods long-stalked. Leaves radical, trifoliate.

†† Sepals and large spur-shaped petals regular, each 5.

9. *Aquilegia*. Pistils 5, with slender styles. Leaves ternately compound.

††† Flowers regular, racemose. Sepals caducous. Petals very small, stamen-like, or none. Leaves decomposed.

10. *Actæa*. Flowers in a single short raceme. Pistil single, forming a many-seeded berry.

1. CLEMATIS, L. VIRGIN'S-BOWER.

Sepals 4, or rarely more, colored, the valvate margins turned inward in the bud. Petals none or small. Achenes numerous in a head, bearing the persistent styles as naked, hairy, or plumose tails.—Perennial herbs or vines, mostly a little woody, and climbing by the bending or clasping of the leaf-stalks, rarely low and erect. Leaves opposite. (*Κληματίς*, a name of Dioscorides for a climbing plant with long and lithe branches.)

§ 1. *FLAMMULA*. Flowers cymose-paniculate, rather small, in our species dioecious. Sepals petaloid, whitish, spreading, thin. Petals none. Anthers short, blunt.

1. *C. Virginiana*, L. COMMON VIRGIN'S-BOWER. Smooth; leaves bearing 3 ovate acute leaflets, which are cut or lobed, and somewhat heart-shaped at the base; tails of the fruit plumose.—River-banks, etc., common, climbing over shrubs. July, August.

2. ANEMONE, Tourn. ANEMONE. WIND-FLOWER.

Sepals few or many, petal-like. Petals none. Achenes pointed or tailed, flattened, not ribbed. Seed suspended.—Perennial herbs with radical leaves; those of the stem 2 or 3 together, opposite or whorled, and forming an involucre remote from the flower; peduncles 1-flowered, solitary or umbellate. (The ancient Greek and Latin name, from *ἀνεμῶ*, to be shaken by the wind.)

§ 1. *ANEMONE* proper. Styles short, not plumose. Staminodia none.

*Achenes densely long-woolly, compressed; involucre far below the flower.

† Stems several; sepals 5–8; style filiform.

1. *A. parviflora*, Michx. Stem 3–12' high from a slender root-stock, 1-flowered; root-leaves 3-parted, their broadly wedge-shaped divisions crenate-incised or lobed; involucre 2–3-leaved; sepals 5

or 6, oval, white; head of fruit globular.—Newf. and Lab., Lake Superior, northward and westward. May, June.

†† *Taller, commonly branching above or producing two or more peduncles; involucreal leaves long petioled; sepals 5-8, silky or downy beneath (4-6" long), oval or oblong; style subulate.*

2. **A. Virginiana**, L. More loosely pubescent or glabrate; involucreal leaves 3, 3-parted; their *divisions ovate-lanceolate*, pointed, cut-serrate, the lateral 2-parted, the middle 3-cleft; peduncles elongated, the earliest naked, the others with a 2-leaved involucre at the middle, repeatedly proliferous; *sepals 5, acute, greenish* (in one variety white and obtuse); *head of fruit oval or oblong*.—Woods and meadows; common. June-August.—Plant 2-3° high; the upright peduncles 6-12' long.

** *Achenes rather few, nearly naked, ovate-oblong; stems slender, 1-flowered; leaves radical.*

3. **A. nemorosa**, L. WIND-FLOWER. WOOD A. Low, smoothish; stem perfectly simple, from a filiform rootstock; *involucre of 3 long-petioled trifoliate leaves*, their leaflets wedge-shaped or oblong, and toothed or cut, or the lateral ones (var. *QUINQUEFOLIA*) 2-parted; a similar radical leaf in sterile plants solitary from the rootstock; peduncle not longer than the involucre; *sepals 4-7, oval, white, sometimes blue, or tinged with purple outside; carpels only 15-20, oblong, with a hooked beak*.—Margin of woods. April, May.—A delicate vernal species; the flower 1' broad. (Eu.)

3. **HEPATICA**, Dill. LIVER-LEAF. **HEPATICA**.

Involucre simple and 3-leaved, very close to the flower, so as to resemble a calyx; otherwise as in *Anemone*.—Leaves all radical, heart-shaped and 3-lobed, thickish and persistent through the winter, the new ones appearing later than the flowers, which are single, on hairy scapes. (Name from a fancied resemblance to the liver in the shape of the leaves.)

1. **H. triloba**, Chaix. Leaves with 3 ovate obtuse or rounded lobes; those of the involucre also obtuse; *sepals 6-12, blue, purplish, or nearly white; achenes several, in a small loose head, ovate-oblong, pointed, hairy*.—Woods; common from the Atlantic to Mo.,

Minn., and northward; flowering soon after the snow leaves the ground in spring. (Eu.)

2. *H. acutiloba*, DC. Leaves with 3 ovate and pointed lobes, or sometimes 5-lobed; those of the involucre acute or acutish.—Passes into the other and has the same range.

4. ANEMONELLA, Spach.

Involucre compound, at the base of an umbel of flowers. Sepals 5–10, white and conspicuous. Petals none. Achenes 4–15, ovoid, terete, strongly 8–10 ribbed, sessile. Stigma terminal, broad and depressed.—Low glabrous perennial; leaves all radical, compound.

1. *A. thalictroides*, Spach. RUE-ANEMONE. Stem and slender petiole of radical leaf (a span high) rising from a cluster of thickened tuberous roots; leaves 2–3-ternately compound; leaflets roundish, somewhat 3-lobed at the end, cordate at the base, long-petiolulate, those of the 2–3-leaved 1–2-ternate involucre similar; flowers several in an umbel; sepals oval ($\frac{1}{2}$ ' long, rarely pinkish), not early deciduous. (*Thalictrum anemonoides*, Michx.)—Woods, common, flowering in early spring with *Anemone nemorosa*, and considerably resembling it. Rarely the sepals are 3-lobed like the leaflets.

5. THALICTRUM, Tourn. MEADOW-RUE.

Sepals 4–5, petal-like or greenish, usually caducous. Petals none. Achenes 4–15, grooved or ribbed, or else inflated. Stigma unilateral. Seed suspended.—Perennials, with alternate 2–3-ternately compound leaves, the divisions and the leaflets stalked; petioles dilated at base. Flowers in corymbs or panicles, often polygamous or dioecious. (Derivation obscure.)

* *Flowers dioecious or sometimes polygamous, in ample panicles; filaments slender; stigmas elongated, linear or subulate; achenes sessile or short-stipitate, ovoid, pointed, strongly several-angled and grooved.*

1. *T. dioicum*, L. EARLY MEADOW-RUE. Smooth and pale or glaucous, 1–2° high; leaves (2–3) all with general petioles; leaflets drooping, rounded and 3–7 lobed; flowers purplish and greenish, dioecious; the yellowish anthers linear, mucronate, drooping on fine capillary filaments.—Rocky woods, etc.; common. April, May.

2. **T. polygamum**, Muhl. TALL M. Smooth, not glandular, 4-8° high; stem-leaves sessile; leaflets rather firm, roundish to oblong, commonly with mucronate lobes or tips, sometimes puberulent beneath; panicles very compound; flowers white, the fertile ones with some stamens; anthers not drooping, small, oblong, blunt, the mostly white filaments decidedly thickened upwards. (T. Cornuti, *Man.*, not *L.*)--Wet meadows and along rivulets, N.S. and Lab., to Ohio and southward; common. July-September.

3. **T. purpurascens**, L. PURPLISH M. Stem (2-4° high) usually purplish; stem-leaves sessile or nearly so; leaflets more veiny and reticulated beneath, with or without gland-tipped or glandless hairs or waxy atoms; panicles compound; flowers (sepals, filaments, etc.) greenish and purplish, diœcious; anthers linear or oblong-linear, mucronulate, drooping on capillary filaments occasionally broadened at the summit.—Dry uplands and rocky hills, Q. and Ont., to Minn. and southward. May, June.

6. **RANUNCULUS**, Tourn. CROWFOOT. BUTTERCUP.

Sepals 5. Petals 5, flat, with a little pit or scale at the base inside. Achenes numerous, in a head, mostly flattened, pointed; the seed erect.—Annuals or perennials; stem-leaves alternate. Flowers solitary or somewhat corymbed, yellow, rarely white. (Sepals and petals rarely only 3, the latter often more than 5. Stamens occasionally few.)—(A Latin name for a little frog; applied by Pliny to these plants, the aquatic species growing where frogs abound.)

§ 1. **BATRACHIUM**. *Petals with a spot or naked pit at base, white, or only the claw yellow; achenes marginless, transversely wrinkled; aquatic or sub-aquatic perennials, with the immersed foliage repeatedly dissected (mostly by threes) into capillary divisions; peduncles 1-flowered, opposite the leaves.*

* *Receptacle hairy.*

1. **R. aquatilis**, L., var. **trichophyllus**, Gray. COMMON WHITE WATER-CROWFOOT. *Leaves all under water and mostly petioled, their capillary divisions and subdivisions rather long and soft, usually collapsing more or less when withdrawn from the water; petiole rather narrowly dilated.*—Common, especially in slow-

flowing waters, the eastern form with more soft and flaccid leaves. June–August. (Eu.)

§ 2. **HALODES.** *Petals yellow, with nectariferous pit and scale ; carpels thin-walled, striate, in an oblong head ; scaposa, spreading by runners.*

2. **R. Cymbalaria**, Pursh. SEASIDE CROWFOOT. Glabrous ; scapes 1–6' high, 1–7 flowered ; leaves clustered at the root and on the joints of the long rooting runners, roundish heart-shaped or kidney-shaped, crenate, rather fleshy, long-petioled ; petals 5–8.—Sandy shores, from N. S. along the Great Lakes, and westward ; also at salt springs. June–August.

§ 3. **RANUNCULUS** proper. *Petals with a little scale at the base, yellow ; achenes nerveless.*

* *Achenes smooth ; mostly perennial.*

† *Aquatic ; immersed leaves filiformly dissected, as in § Batrachium.*

3. **R. multifidus**, Pursh. YELLOW WATER-CROWFOOT. Stems floating or immersed, with the leaves all repeatedly 3-forked into long filiform divisions, or sometimes creeping in the mud (perennial by rooting from the nodes, if at all) ; emerged leaves with shorter and linear or wedge-shaped divisions, or else kidney-shaped and sparingly lobed or toothed ; petals 5–8, deep bright yellow, 4–6" long, much larger than the calyx ; carpels in a round head, pointed with a straight beak.—C. B., and westward. May–July.—Out of water it is often pubescent.

†† *Terrestrial but growing in very wet places, glabrous or nearly so ; leaves entire or barely toothed, all or else all but the lowest lanceolate or linear ; carpels forming a globular head. (SPEARWORT.)*

4. **R. Flammula**, L. SMALLER SPEARWORT. Stem reclining or ascending, rooting below, leaves lanceolate or linear, or the lowest ovate-oblong to lanceolate, entire or nearly so, mostly petioled (1–2' long) ; petals 5–7, much longer than the calyx, bright yellow, carpels small, flattish but turgid, mucronate with a short abrupt point.—Only a small form (var. *INTERMEDIUS*) met with in this country (shore of L. Ontario, and northward), a span high, with flowers 3–5" in diameter, passing into

Var. *reptans*, E. Meyer. CREEPING S. Small, slender, the filiform creeping stems rooting at all the joints; leaves linear, spatulate, or oblong ($\frac{1}{4}$ –1' long); flowers small.—Gravelly or sandy banks; Newf. westward. June, Sept. (Eu.)

+++ Terrestrial, but often in wet places; leaves mostly cleft or divided.

‡ Root-leaves not divided to the very base; achenes marginless.

5. *R. rhomboideus*, Goldie. Low (3–8' high), hairy; root-leaves roundish or rhombic-ovate, rarely subcordate, toothed or crenate; lowest stem-leaves similar or 3–5-lobed, the upper 3–5-parted, almost sessile, the lobes linear; carpels orbicular with a minute beak, in a globose head; petals large, deep yellow.—Q. and Ont. westward and northward. April, May.

6. *R. abortivus*, L. SMALL-FLOWERED C. Biennial, glabrous, branching, 6'–2° high; primary root-leaves round heart-shaped or kidney-form, barely crenate, the succeeding often 3-lobed or 3-parted; those of the stem and branches 3–5-parted or divided, subsessile, the divisions oblong or narrowly wedge-form, mostly toothed; head globose; carpels mucronate, with a minute curved beak; petals pale yellow, shorter than the small reflexed calyx.—Shady hillsides and along brooks, common. April–June.

Var. *micranthus*, Gray. Pubescent, roots often fusiform-thickened; root-leaves seldom at all heart-shaped, some 3-parted or 3-divided; peduncles more slender and carpels fewer.—Q. and westward.

7. *R. sceleratus*, L. CURSED C. Annual, glabrous; root-leaves 3-lobed, rounded; lower stem-leaves 3-parted, the lobes obtusely cut and toothed, the uppermost almost sessile, with the lobes oblong-linear and nearly entire; carpels barely mucronulate, very numerous, in oblong or cylindrical heads; petals scarcely exceeding the calyx.—Wet ditches; N.B., westward; appearing as if introduced. June–Aug.—Stem thick and hollow, 1° high; juice acrid and blistering; leaves thickish; flowers small, pale yellow. (Eu.)

‡‡ Leaves variously cleft or divided; achenes in globular heads (except n. 10), compressed, with an evident firm margin; hirsute or pubescent.

|| Achenes with long recurved beak; root-leaves rarely divided.

8. **R. recurvatus**, Poir. HOOKED C. Hirsute, 1-2° high ; leaves of the root and stem nearly alike, long-petioled, deeply 3-cleft, large ; the lobes broadly wedge-shaped, 2-3-cleft, cut and toothed towards the apex ; petals shorter than the reflexed calyx, pale.— Woods, common. May, June.

||| *Style subulate, stigmatose along the inner margin, mostly persistent.*

9. **R. repens**, L. Low, hairy or nearly glabrous ; stems ascending, or in wet ground, some of them forming long runners ; leaves 3-divided, the divisions all stalked, broadly wedge-shaped or ovate, unequally 3-cleft or parted and variously cut, never pinnately compound, frequently white-variegated or spotted. In low grounds ; generally in waste grounds near the coast and probably introduced from Europe, but indigenous westward.

10. **R. Pennsylvanicus**, L. f. BRISTLY C. Stout and erect from a usually annual root, hirsute with widely-spreading bristly hairs, leafy to the top, 1-2° high ; leaves all ternately divided or compound, the stalked leaflets unequally 3-cleft, sharply cut and toothed, acute ; flowers inconspicuous ; calyx reflexed ; head of carpels oblong.—Wet places, common. June-Aug.

11. **R. bulbosus**, L. BULBOUS C. or BUTTERCUPS. Hairy ; stem erect from a bulb-like base, 1° high ; radical leaves 3-divided ; the lateral divisions sessile, the terminal stalked and 3-parted, all wedge-shaped, cleft and toothed ; peduncles furrowed ; petals round, wedge-shaped at base ; calyx reflexed ; carpels tipped with a very short beak.—Fields ; very abundant in E. New England ; Ont. May-July.—Leaves appearing as if pinnate. Petals often 6 or 7, deep glossy yellow, the corolla more than an inch broad. (Nat. from Eu.)

12. **R. acris**, L. TALL C. or BUTTERCUPS. Hairy ; stem erect (2-3° high) ; leaves 3-divided ; the divisions all sessile and 3-cleft or parted, their segments cut into lanceolate or linear crowded lobes ; peduncles not furrowed ; petals obovate, much longer than the spreading calyx.—Fields ; common, especially eastward. June-Aug.—Flower nearly as large as the last, but not so deep yellow.—The *Buttercups* are avoided by cattle, on account of their very acrid or even blistering juice, which property, however, is dissipated in drying when these plants are cut with hay. (Nat. from Eu.)

7. CALTHA, L. MARSH MARIGOLD.

Sepals 5-9, petal-like. Petals none. Pistils 5-10, with scarcely any styles. Pods (follicles) compressed, spreading, many-seeded.—Glabrous perennials, with round and heart-shaped or kidney-form, large, undivided leaves. (An ancient Latin name for the common Marigold.)

1. *C. palustris*, L. Stem hollow, furrowed; leaves round or kidney-shaped, either crenate or dentate or nearly entire; sepals broadly oval (bright yellow).—Swamps and wet meadows, common. April, May.—Often called incorrectly *Cowslips*; used as a pot-herb in spring, when coming into flower.

8. COPTIS, Salisb. GOLDTHREAD.

Sepals 5-7, petal-like, deciduous. Petals 5-7, small, club-shaped, hollow at the apex. Stamens 15-25. Pistils 3-7, on slender stalks. Pods divergent, membranaceous, pointed with the style, 4-8-seeded.—Low, smooth perennials, with ternately divided root-leaves, and small white flowers on scapes. (Name from κόπτω, *to cut*, alluding to the divided leaves.)

1. *C. trifolia*, Salisb. THREE-LEAVED GOLDTHREAD. Leaflets 3, obovate-wedge-form, sharply toothed, obscurely 3-lobed, scape 1-flowered.—Bogs, abundant northward, extending south to Maryland along the mountains, and west to Iowa. May.—Root of long, bright yellow, bitter fibres. Leaves evergreen, shining. Scape naked, slender, 3-5' high. (Eu.)

9. AQUILEGIA, Tourne. COLUMBINE.

Sepals 5, regular, colored like the petals. Petals 5, all alike, with a short spreading lip, produced backward into large hollow spurs, much longer than the calyx. Pistils 5, with slender styles. Pods erect, many-seeded.—Perennials, with 2-3-ternately compound leaves, the leaflets lobed. Flowers large and showy, terminating the branches. (Name from *aquilegus*, water-drawing.)

1. *A. Canadensis*, L. WILD COLUMBINE. Spurs nearly straight, stamens and styles longer than the ovate sepals.—Rocks, common. April-June.—Flowers 2' long, scarlet, yellow inside (or rarely all over), nodding, so that the spurs turn upward, but the stalk becomes upright in fruit.

10. *ACTÆA*, L. BANEERRY. COHOSH.

Sepals 4 or 5, falling off when the flower expands. Petals 4-10, small, flat, spatulate, on slender claws. Stamens numerous, with slender white filaments. Pistil single; stigma sessile, depressed, 2-lobed. Fruit a many-seeded berry. Seeds smooth, flattened, and packed horizontally in 2 rows.—Perennials, with ample 2-ternately compound leaves, the ovate leaflets sharply cleft and toothed, and a short and thick terminal raceme of white flowers. (From *ἀκτῆα*, *actæa*, ancient names of the elder, transferred by Linnæus.)

1. *A. spicata*, L., var. *rubra*, Ait. RED BANEERRY. *Raceme ovate*; petals rhombic-spatulate, much shorter than the stamens; *pedicels slender*; *berries cherry-red*, or sometimes white, oval.—Rich woods, common, especially northward. April, May.—Plant 2° high. (Eu.)

2. *A. alba*, Bigel. WHITE BANEERRY. Leaflets more incised and sharply toothed; *raceme oblong*; *petals slender*, mostly truncate at the end, appearing to be transformed stamens; *pedicels thickened in fruit*, as large as the peduncle and red, the globular-oval berries *white*.—Rich woods, flowering a week or two later than the other, and more common westward and southward.—White berries rarely occur with slender pedicels, also red berries with thick pedicels; but these are perhaps the result of crossing.

ORDER 2. MENISPERMACEÆ (MOONSEED FAMILY).

Woody climbers, with *palmate or peltate alternate leaves*, *no stipules*, the *sepals and petals similar*, in three or more rows, *imbricated in the bud*; *hypogynous*, *diœcious*, 3-6-gynous; *fruit a 1-seeded drupe*, with a large or long curved embryo in scanty albumen.—Flowers small. Stamens several. Ovaries nearly straight, with the stigma at the apex, but often incurved in fruiting, so that the seed and embryo are bent into a crescent or ring.—Chiefly a tropical family.

* Sepals and petals present. Anthers 4-celled. Seed incurved.

1. *Menispermum*. Stamens 12-24, slender. Petals 6-8.

3. *MENISPERMUM*, L. MOONSEED.

Sepals 4-8. Petals 6-8, short. Stamens 12-24 in the sterile flowers, as long as the sepals; anthers 4-celled. Pistils 2-4 in the

fertile flowers, raised on a short common receptacle ; stigma broad and flat. Drupe globular, the mark of the stigma near the base, the ovary in its growth after flowering being strongly incurved, so that the (wrinkled and grooved) laterally flattened stone takes the form of a large crescent or ring. The slender embryo therefore is horseshoe-shaped ; cotyledons filiform.—Flowers white, in small and loose axillary panicles. (Name from *μῑνη*, moon, and *σπέρμα*, seed.)

1. **M. Canadense**, L. Leaves peltate near the edge, 3-7-angled or lobed.—Banks of streams ; common. June, July.—Drupes black with a bloom, ripe in September, looking like frost grapes.

ORDER 3. BERBERIDACEÆ (BARBERRY FAMILY).

Shrubs or herbs, with the sepals and petals both imbricated in the bud, usually in two rows of 3 (rarely 2 or 4) each ; the hypogynous stamens as many as the petals and opposite to them ; anthers opening by 2 valves or lids hinged at the top. Pistil single. Filaments short. Style short or none. Fruit a berry or a pod. Seeds few or several, anatropous, with albumen. Embryo small, except in Berberis. Leaves alternate, with dilated bases or stipulate.

* Petals and stamens 6. Fruit few-seeded.

1. **Berberis**. Shrubs, with yellow flowers and wood ; a pair of glandular spots on the base of each petal. Fruit a berry.
2. **Caulophyllum**. Herb, with greenish flowers ; petals thick, much shorter than the sepals. Ovary soon bursting ; the two seeds left naked.

1. BERBERIS, L. BARBERRY.

Sepals 6, roundish, with 2-6 bracelets outside. Petals 6, obovate, concave, with two glandular spots inside above the short claw. Stamens 6. Stigma circular, depressed. Fruit a 1-few-seeded berry. Seeds erect, with a crustaceous integument.—Shrubs, with yellow wood and inner bark, yellow flowers in drooping racemes, sour berries, and 1-9 foliolate leaves. Stamens irritable. (Derived from *Berberys*, the Arabic name of the fruit.)

B. vulgaris, L. COMMON BARBERRY. Leaves scattered on the fresh shoots of the season, mostly reduced to sharp triple or branched spines, from the axils of which the next season proceed rosettes or fascicles of obovate oblong closely bristly-toothed leaves

(the short petiole jointed !), and drooping *many-flowered racemes*; petals entire; *berries oblong*, scarlet.—Thickets and waste grounds in E. New Eng., where it has become thoroughly wild; N.B. to Ont. May, June. (Nat. from Eu.)

2. CAULOPHYLLUM, Michx. BLUE COHOSH.

Sepals 6, with 3 or 4 small bractlets at the base, ovate-oblong. Petals 6 thick and gland-like, somewhat kidney-shaped or hooded bodies, with short claws, much smaller than the sepals, one at the base of each of them. Stamens 6; anthers oblong. Pistil gibbous; style short; stigma minute and unilateral; ovary bursting soon after flowering by the pressure of the 2 erect, enlarging seeds, and withering away; the spherical seeds naked on their thick seed-stalks, looking like drupes, the fleshy integument turning blue; albumen horny.—A perennial glabrous herb, with matted knotty rootstocks, sending up in early spring a simple and naked stem, terminated by a small raceme or panicle of yellowish-green flowers, and a little below bearing a large tritermately compound sessile leaf (whence the name, from *καυλός*, stem, and *φύλλον*, leaf, the stem seeming to form a stalk for the great leaf).

1. C. thalictroides, Michx. Also called PAPOOSE-ROOT. Stems 1-2½° high; leaflets obovate wedge-form, 2-3-lobed, a smaller biternate leaf often at the base of the panicle; flowers appearing while the leaf is yet small.—Deep rich woods; N. B. and Q.; common westward. April, May.—Whole plant glaucous when young, as also the seeds, which are as large as peas.

ORDER 4. NYMPHÆACEÆ (WATER-LILY FAMILY).

Aquatic perennial herbs, with horizontal rootstocks and peltate or sometimes only cordate leaves floating or emersed; the ovules borne on the sides or back (or when solitary hanging from the summit) of the cells, not on the ventral suture; the embryo enclosed in a little bag at the end of the albumen next the hilum, except in Nelumbium, which has no albumen. Radicle hardly any; cotyledons thick and fleshy, enclosing a well-developed plumule.—Flowers axillary, solitary. Vernation involute. Rootstocks apparently endogenous.—The few genera differ so much in the flower and fruit that they are separated into the three following sub-orders.

SUB-ORDER I. Cabombeæ. Sepals and petals each 3 or sometimes 4, hypogynous and persistent. Stamens definite (3-18). Pistils 2-18, free and distinct, coriaceous and indehiscent, 1-3-seeded on the dorsal suture.—Stems slender, leafy, coated with mucilage. Flowers small.

1. **Brasenia.** Stamens 12-18. Carpels 4-18. Leaves all peltate.

SUB-ORDER II. Nymphæaceæ proper. Sepals 4-6, and petals numerous in many rows, persistent or decaying away, either hypogynous or variously adnate to the surface of the compound 8-30-celled ovary, which is formed by the union of as many carpels; the numerous ovules inserted over the whole inner face of the cells, except at the ventral suture. Stigmas radiate as in Poppy. Fruit baccate, with a firm rind. Petioles and peduncles from a thick rootstock.

2. **Nymphæa.** Petals adnate to the ovary, large; the stamens on its summit.

3. **Nuphar.** Petals (very small and stamen-like) and stamens inserted under the ovary.

1. **BRASENIA**, Schreber. **WATER-SHIELD.**

Sepals 3 or 4. Petals 3 or 4, linear, sessile. Stamens 12-18; filaments filiform; anthers innate. Pistils 4-18, forming little club-shaped indehiscent pods; stigmas linear. Seeds 1-2, pendulous on the dorsal suture!—Rootstock creeping. Leaves alternate, long-petioled, centrally peltate, oval, floating. Flowers axillary, small, dull-purple. (Name of uncertain origin.)

1. **B. peltata**, Pursh. Leaves entire, 1-4' across.—Ponds and slow streams. June-Aug. (Asia, Africa and Australia).

2. **NYPHÆA**, Tourn. **WATER-NYPH. WATER-LILY.**

Sepals 4, green outside, nearly free. Petals numerous, in many rows, the innermost gradually passing into stamens, imbricately inserted all over the ovary. Stamens indefinite, inserted on the ovary, the outer with dilated filaments. Ovary 12-35-celled, the concave summit tipped with a globular projection at the centre, around which are the radiate stigmas; these project at the margin, and are extended into linear and incurved sterile appendages. Fruit depressed-globular, covered with the bases of the decayed petals, maturing under water. Seeds enveloped by a sac-like aril.—Flowers

white, pink, yellow, or blue, very showy. (Dedicated by the Greeks to the Water-Nymphs.)

1. **N. odorata**, Ait. SWEET-SCENTED WATER-LILY. *Rootstock with few and persistent branches*; leaves orbicular, cordate-cleft at the base to the petiole (5-9' wide), the margin entire; stipules broadly triangular or almost kidney-shaped, notched at the apex, appressed to the rootstock; *flower white, very sweet scented* (often as much as 5½' in diameter when fully expanded, opening early in the morning, closing in the afternoon); petals obtuse; anthers blunt; aril much longer than the distinctly stipitate *oblong seeds* (these about 1½" long).—Ponds and still or slow-flowing water; common. June-Sept.

3. **NUPHAR**, Smith. YELLOW POND-LILY. SPATTER-DOCK.

Sepals 5, 6, or sometimes more, colored, or partly green outside, roundish, concave. Petals numerous, small and thickish, stamen-like or scale-like, inserted with the very numerous short stamens on the receptacle under the ovary, not surpassing the disk-like 8-24-rayed sessile stigma, persistent and at length recurved. Fruit ovoid, naked, usually ripening above water. Aril none.—Rootstock creeping, cylindrical. Leaves with a deep sinus at the base. Flowers yellow or sometimes tinged with purple, produced all summer. (Name said to be of Arabic origin.)

1. **N. advena**, Ait. f. *Sepals 6, unequal; petals shorter than the stamens* and resembling them, thick and fleshy, truncate; stigma nearly entire, 12-24-rayed, pale red; ovary and fruit (1½' long) ovate, not contracted above into a narrow neck; thin submersed leaves seldom present; floating or emersed and erect leaves thick (6-12' long), from roundish to ovate or almost oblong, the sinus open, or closed or narrow.—Very common, in still or stagnant water; stout and coarse; flower often partly purplish (var. **VARIEGATUM**, Engelm.).

2. **N. Kalmianum**, Ait. Very slender and with slender rootstock; submersed leaves thin, round-reniform, the floating broadly elliptical with a deep narrow sinus, 2-4' long; sepals usually 5, the flowers an inch broad or less; petals spatulate or obovate; stigmas 7-10-rayed, dark red; fruit globular with a short neck (6-9" in

diameter). (*N. luteum*, var. *pumilum*, *Man.*)—Maine and Newf., to Penn. and Minn., and northward.

ORDER 5. **SARRACENIACEÆ** (PITCHER-PLANTS).

Polyandrous and hypogynous bog-plants, with hollow pitcher-form or trumpet-shaped leaves,—comprising one plant in the mountains of Guiana, another (*Darlingtonia*, *Torr.*) in California, and the following genus in the Atlantic United States.

1. **SARRACENIA**, TOURN. SIDE-SADDLE FLOWER.

Sepals 5, with 3 bractlets at the base, colored, persistent. Petals 5, oblong or obovate, incurved, deciduous. Stamens numerous, hypogynous. Ovary compound, 5-celled, globose, crowned with a short style, which is expanded at the summit into a very broad and petal-like, 5-angled, 5-rayed, umbrella-shaped body; the 5 delicate rays terminating under the angles in as many little hooked stigmas. Capsule with a granular surface, 5-celled, with many-seeded placentæ in the axis, loculicidally 5-valved. Seeds anatropous, with a small embryo at the base of fleshy albumen.—Perennials, yellowish-green and purplish; the hollow leaves all radical, with a wing on one side, and a rounded arching hood at the apex. Scape naked, 1-flowered; flower nodding. (Named by Tournefort in honor of *Dr. Sarrasin* of Quebec, who first sent our Northern species, and a botanical account of it, to Europe.)

1. *S. purpurea*, L. SIDE-SADDLE FLOWER. PITCHER-PLANT. HUNTSMAN'S CUP. *Leaves pitcher-shaped*, ascending, curved, broadly winged; the hood erect, open, round heart-shaped; *flower deep purple*; the fiddle-shaped petals arched over the greenish-yellow style.—Varies rarely with greenish-yellow flowers, and without purple veins in the foliage.—Peat-bogs; common from N. Eng. and Lab. to Minn., N.-E. Iowa, and southward east of the Alleghanies. June.—The curious leaves are usually half filled with water and drowned insects. The inner face of the hood is clothed with stiff bristles pointing downward. Flower globose, nodding on a scape a foot high; it is difficult to fancy any resemblance between its shape and a side-saddle, but it is not very unlike a pillion.

ORDER 6. **PAPAVERACEÆ** (POPPY FAMILY).

Herbs with milky or colored juice, regular flowers with the parts in twos or fours, fugacious sepals, polyandrous, hypogynous, the ovary

1-celled with two or more parietal placentæ.—Sepals 2, rarely 3, falling when the flower expands. Petals 4–12, spreading, imbricated and often crumpled in the bud, early deciduous. Stamens rarely as few as 16, distinct. Fruit a dry 1-celled pod. Seeds numerous, anatropous, often crested, with a minute embryo at the base of fleshy and oily albumen.—Leaves alternate, without stipules. Peduncles mostly 1-flowered. Juice narcotic or acrid.

* Petals 8–12, not crumpled in the bud, white. Pod 1-celled, 2-valved.

1. *Sanguinaria*. Petals white. Leaves and 1-flowered scape from a short rootstock.

** Petals 4, crumpled in the bud. Pod 2-valved or more.

† Pod 2–4-valved, the valves separating to the base from the placentas. Leaves pinnately parted. Flowers yellow.

2. *Chelidonium*. Pod linear, smooth; style almost none; stigmas and placentas 2.

1. SANGUINARIA, Dill. BLOOD-ROOT.

Sepals 2. Petals 8–12, spatulate-oblong, the inner narrower. Stamens about 24. Style short; stigma 2-grooved. Pod oblong, turgid, 1-celled, 2-valved. Seeds with a large crest.—A low perennial, with thick prostrate premorse rootstocks, surcharged with red-orange acrid juice, sending up in earliest spring a rounded palmate-lobed leaf, and a 1-flowered naked scape. Flower white, handsome, the bud erect, the petals not crumpled. (Name from the color of the juice.)

1. *S. Canadensis*, L. Open rich woods; common. April, May.

2. CHELIDONIUM, L. CELANDINE.

Sepals 2. Petals 4. Stamens 16–24. Style nearly none; stigma 2-lobed. Pod linear, slender, smooth, 2-valved, the valves opening from the bottom upward. Seeds crested.—Biennial herb with brittle stems, saffron-colored acrid juice, pinnately divided or 2-pinnatifid and toothed or cut leaves, and small yellow flowers in a pedunculate umbel; buds nodding. (Ancient Greek name from *χελιδών*, the swallow, because its flowers appear with the swallows.)

1. *C. majus*, L. CELANDINE. Waste grounds near dwellings. N.B. to Ont. May–Aug. (Adv. from Eu.)

ORDER 7. FUMARIACEÆ (FUMITORY FAMILY).

Delicate smooth herbs, with watery juice, compound dissected leaves, irregular flowers, with 4 somewhat united petals, 6 diadelphous

stamens, and 2-merous pods and seeds like those of the Poppy Family.
 —Sepals 2, small and scale-like. Corolla flattened, closed; the 4 petals in two pairs; the outer with spreading tips, and one or both of them spurred or saccate at the base; inner pair narrower, and their callous crested tips united over the stigma. Stamens in two sets of 3 each, placed opposite the larger petals, hypogynous; their filaments often united; middle anther of each set 2-celled, the lateral ones 1-celled. Pod 1-celled, either 1-seeded and indehiscent, or several-seeded with 2 parietal placentre and deciduous valves. —Leaves delicate, usually alternate, without stipules. Slightly bitter, innocent plants.

* Corolla bigibbous or 2-spurred, the 2 outer petals alike. Pod several-seeded.

1. **Adlumia.** Petals united into a spongy persistent subcordate corolla. Seeds crestless.
2. **Dicentra.** Corolla cordate or 2-spurred at base, less united. Seeds crested.
 * * Corolla with but one petal spurred at base, deciduous.
3. **Corydalis.** Pod with few to many crested or arilled seeds.
4. **Fumaria.** Fruit a globular 1-seeded nutlet. Seed crestless.

1. **ADLUMIA**, Raf. CLIMBING FUMITORY.

Petals all permanently united in a cordate-ovate corolla, becoming spongy-cellular and persistent, enclosing the small, few-seeded pod. Seeds not crested. Stigma 2-crested. Filaments monadelphous below in a tube which is adherent to the corolla, diadelphous at the summit. —A climbing biennial, with thrice-pinnate leaves, cut-lobed delicate leaflets, and ample panicles of drooping white or purplish flowers. (Dedicated by Rafinesque to *Major Adlum*.)

1. **A. cirrhosa**, Raf. Wet woods; N.B. to Wisc., E. Kan., and southward. —June–Oct. —A handsome vine, with delicate foliage, climbing by the slender young leaf-stalks over high bushes; often cultivated.

2. **DICENTRA**, Borkh. DUTCHMAN'S BREECHES.

Petals slightly cohering into a heart-shaped or 2-spurred corolla, either deciduous or withering-persistent. Stigma 2-crested and sometimes 2-horned. Filaments slightly united in two sets. Pod 10–20-seeded. Seeds crested. —Low, stemless perennials (as to our wild species) with ternately compound and dissected leaves, and racemose nodding flowers. Pedicels 2-bracted. (Name from *dic*,

twice, and *κέρπον*, a spur;—accidentally printed *DICLYTRA* in the first instance, which by an erroneous conjecture was afterwards changed into *DIELYTRA*.)

* *Raceme simple, few-flowered.*

1. **D. Cucullaria**, DC. DUTCHMAN'S BREECHES. Scape and slender-petioled leaves from a sort of *granulate bulb*; lobes of leaves linear; *corolla with 2 divergent spurs* longer than the pedicel; *crest of the inner petals minute*.—Rich woods, N.S. to Ont., especially westward.—A very delicate plant, sending up in early spring, from the cluster of grain-like tubers crowded together in the form of a scaly bulb, the finely cut leaves and the slender scape, bearing 4-10 pretty, but odd, white flowers tipped with cream color.

2. **D. Canadensis**, DC. SQUIRREL CORN. Subterranean shoots bearing scattered *grain-like tubers* (resembling peas or grains of Indian corn, yellow); leaves as in n. 1; *corolla merely heart-shaped*, the spurs very short and rounded; *crest of the inner petals conspicuous, projecting*.—Rich woods, N.S. to Ont. April, May.—Flowers greenish-white tinged with rose, with the fragrance of Hyacinths.

3. **CORYDALIS**, Vent.

Corolla 1-spurred at the base (on the upper side), deciduous. Style persistent. Pod many-seeded. Seeds crested or arilled. Flowers in racemes. Our species are biennial, leafy-stemmed, and pale or glaucous. (The ancient Greek name for the crested lark.)

* *Stem strict; flowers purplish or rose-color with yellow tips.*

1. **C. glauca**, Pursh. PALE CORYDALIS. Racemes panicled; spur of the corolla very short and rounded; pods erect, slender, elongated.—Rocky places; common; 6'-2° high. May-Aug.

** *Low, ascending; flowers yellow.*

† *Outer petals merely carinate on the back, not crested.*

3. **C. aurea**, Willd. GOLDEN C. Corolla golden-yellow, $\frac{1}{2}$ ' long, the slightly decurved spur about half as long, shorter than the pedicel; pods spreading or pendulous, becoming torulose; seeds obtuse-margined.—Rocky banks, Q. and westward.

4. **FUMARIA**, Tourn. FUMITORY.

Corolla 1-spurred at the base. Style deciduous. Fruit indehiscent, small, globular, 1-seeded. Seeds crestless.—Branched and

leafy-stemmed annuals, with finely dissected compound leaves, and small flowers in dense racemes or spikes. (Name from *fumus*, smoke.)

1. **F. officinalis**, L. COMMON FUMITORY. Sepals ovate-lanceolate, acute, sharply toothed, narrower and shorter than the corolla (which is flesh-color tipped with crimson); fruit slightly notched.—Waste places, about dwellings, Q. and Ont. (Adv. from Eu.)

ORDER 8. CRUCIFERÆ (MUSTARD FAMILY).

Herbs, with a pungent watery juice and cruciform tetradynamous flowers; fruit a silique or silicle.—Sepals 4, deciduous. Petals 4, hypogynous, regular, placed opposite each other in pairs, their spreading limbs forming a cross. Stamens 6, two of them inserted lower down and shorter (rarely only 4 or 2). Pod usually 2-celled by a thin partition stretched between the two marginal placentæ, from which when ripe the valves separate, either much longer than broad (a *silique*), or short (a *silicle*), sometimes indehiscent and nut-like (*nucumentaceous*), or separating across into 1-seeded joints (*lomentaceous*). Seeds campylotropous, without albumen, filled by the large embryo, which is curved or folded in various ways: *i.e.*, the *cotyledons accumbent*, viz., their margins on one side applied to the radicle, so that the cross-section of the seed appears thus $o=$; or else *incumbent*, viz., the back of one cotyledon applied to the radicle, thus $o||$. In these cases the cotyledons are plane; but they may be folded upon themselves and round the radicle, as in *Mustard*, where they are *conduplicate*, thus $o>>$. Leaves alternate, no stipules. Flowers in terminal racemes or corymbs; pedicels rarely bracted.—A large and very natural family, of pungent or acrid, but not poisonous plants. (The characters of the genera are taken almost wholly from the pods and seeds; the flowers being nearly alike in all.)

SERIES I. Pod 2-celled, regularly dehiscent by 2 valves.

* Pod compressed parallel to the broad partition. Seeds flat or flattish, orbicular or oval; cotyledons accumbent or nearly so.

† Pod linear; valves nerveless. Seeds in one row.

1. **Dentaria**. Stem naked below, 2-3-leaved. Pod coriaceous, with thick placentas, long-styled. Seeds wingless; cotyledons thick, very unequal.
2. **Cardamine**. Stem leafy. Pod coriaceous, with thick placentas. Seeds wingless; cotyledons flattened, equal.

†† Pod linear, or oblong, or orbicular; valves 1-nerved or nerveless. Seeds in 2 rows (except in species of n. 3).

3. *Arabis*. Pod long-linear, the flat or flattish valves more or less 1-nerved. Seeds winged or wingless. Flowers white to purple. Stems leafy, at least below.

4. *Draba*. Pod oval to narrowly oblong or lanceolate; valves flat or flattish, faintly nerved or veined. Seeds wingless, numerous.

** Pod terete or turgid, or 4-angled by the prominent midnerves. Seeds wingless, more or less turgid.

† Pod linear (or oblong or even globular in n. 5).

‡ Cotyledons accumbent.

5. *Nasturtium*. Pod often short; valves strongly convex, nerveless. Seeds small, in 2 rows in each cell. Flowers yellow or white.

6. *Barbarea*. Pod somewhat 4-sided; valves strongly 1-nerved. Seeds in 1 row. Flowers yellow.

‡† Cotyledons incumbent or partially so.

7. *Erysimum*. Pod 4-sided; valves strongly 1-nerved; stigma broadly 2-lobed. Pubescence of appressed 2-3-parted hairs. Flowers yellow.

‡‡ Cotyledons conduplicate.

8. *Brassica*. Pod beaked or pointed beyond the end of the valves, or tipped with a rigid style, nearly terete, or 4-sided. Flowers yellow or whitish.

*** Pod short; the boat-shaped valves conduplicate or much flattened contrary to the narrow partition. Flowers white.

9. *Capsella*. Pod many-seeded, obcordate-triangular, wingless. Cotyledons incumbent.

10. *Lepidium*. Pod 2-seeded, flat, scale-shaped. Cotyledons incumbent or accumbent.

SERIES II. Pods indehiscent, continuous or transversely jointed; joints 1-celled.

11. *Cakile*. Pod short, 2-jointed; joints 1-seeded. Cotyledons plane, accumbent.

12. *Raphanus*. Pod elongated, several-seeded, continuous, or constricted between the seeds and moniliform. Cotyledons conduplicate.

1. DENTARIA, Tourn. TOOTHWORT. PEPPER-ROOT.

Pod lanceolate, flat, as in *Cardamine*. Style elongated. Seeds in one row, wingless, the stalks broad and flat. Cotyledons petioled, thick and very unequal, their margins somewhat infolding each other.—Perennials, of damp woodlands, with long, horizontal, fleshy, sometimes interrupted, scaly or toothed rootstocks, of a pleasant pungent taste; the simple stems leafless below, bearing 2 or 3 petioled compound leaves about or above the middle, and terminated by a single corymb or short raceme of large white or

purple flowers. Flowers larger, pods broader, and seeds larger than is usual in Cardamine. (Name from *dens*, a tooth.)

* *Rootstock elongated ; leaves 3-foliolate.*

1. **D. diphylla**, L. Rootstock long and continuous, often branched, toothed ; stem-leaves 2, similar to the radical ones, close together ; leaflets rhombic-ovate or oblong-ovate, shortly petiolate, coarsely crenate, the teeth abruptly acute ; petals white.—Rich woods, Maine to Q. and Ont. May.—Rootstocks 5–10' long, crisp, tasting like Water-Cress.

2. CARDAMINE, Tourn. BITTER CRESS.

Pod linear, flattened, usually opening elastically from the base ; the valves nerveless and veinless, or nearly so ; placentas and partitions thick. Seeds in a single row in each cell, wingless ; their stalks slender. Cotyledons accumbent, flattened, equal or nearly so, petiolate.—Mostly glabrous perennials, leafy-stemmed, growing along watercourses and in wet places. Flowers white or purple. (A Greek name, in Dioscorides, for some cress, from its cordial or cardiacal qualities.)

* *Root perennial ; leaves simple.*

1. **C. rhomboidea**, DC. SPRING CRESS. Stems upright from a tuberous base and slender rootstock bearing small tubers, simple ; root-leaves round and often heart-shaped ; lower stem-leaves ovate or rhombic-oblong, somewhat petioled, the upper almost lanceolate, sessile, all often sparingly toothed ; pods linear-lanceolate, pointed with a slender style tipped with a conspicuous stigma ; seeds round-oval.—Wet meadows and springs ; common. April–June.—Flowers large, white.

Var. **purpurea**, Torr. Lower (4–6' high), and usually slightly pubescent ; flowers rose-purple, appearing earlier.—Along streams in rich soil. N. S. and Ont.

** *Root mostly biennial or annual ; leaves pinnate ; flowers small, white.*

2. **C. hirsuta**, L. SMALL BITTER CRESS. Glabrous or beset with scattered hairs ; stems (3'–2° high) erect or ascending from the spreading cluster of root-leaves ; their leaflets rounded, those of the upper leaves oblong or linear and often confluent, all either toothed,

angled, or entire; pods linear, very narrow, erect or ascending; style variable.—Wet places; common. May–July.

3. ARABIS, L. ROCK CRESS.

Pod linear, flattened; placentas not thickened; the valves plane or convex, more or less 1-nerved in the middle, or longitudinally veiny. Seeds usually margined or winged. Cotyledons accumbent or a little oblique.—Leaves seldom divided. Flowers white or purple. (Name from the country, *Arabia*. See *Linn. Phil. Bot.* § 235.)

§ 1. ARABIS proper. *Seeds in one row in each cell, orbicular or nearly so, more or less wing-margined; cotyledons strictly accumbent.*

* *Erect and simple leafy-stemmed biennials, with simple leaves, white or whitish flowers, narrow but flattened ascending or erect pods, and nearly wingless seeds.*

1. *A. hirsuta*, Scop. Rough-hairy, sometimes smoothish, strictly erect (1–2° high); stem-leaves oblong or lanceolate, entire or toothed, partly clasping by a somewhat arrow-shaped or heart-shaped base; petals (greenish-white) small, but longer than the calyx; pedicels and pods strictly upright; style scarcely any; immature seeds somewhat 2-rowed.—Rocks, common, N. B. westward. May, June. (Eu.)

** *Erect and simple leafy-stemmed biennials (1–3° high), with small whitish flowers, recurved-spreading or pendulous flat pods (3–4' long), and broadly winged seeds, their stalks adherent to the partition; root-leaves rarely lyrate.*

2. *A. lævigata*, Poir. Smooth and glaucous, upright; stem-leaves partly clasping by the arrow-shaped base, lanceolate or linear, sparingly cut-toothed or entire; petals scarcely longer than the calyx; pods long and narrow, recurved-spreading on ascending or merely spreading pedicels.—Rocky places, Maine and Q. to Ont. May.

§ 2. PSEUDARABIS. *Seeds oblong or elliptical, very small, wingless, in one row; cotyledons often more or less oblique. Biennial or perennial, branching from the base.*

3. *A. lyrata*, L. Mostly glabrous, except the *lyrate-pinnatifid root-leaves*; stem-leaves scattered, spatulate or linear with a tapering base, sparingly toothed or entire; *petals white*, much longer than the yellowish calyx; pods long and slender, flat, ascending or spreading.—On rocks or sandy shores, Q. and Ont. to Minn., and northward. April–July.—Usually biennial, but southward in the mountains decidedly perennial.

4. DRABA, Dill. WHITLOW GRASS.

Pod oval, oblong, or even linear, flat; the valves plane or slightly convex; the partition broad. Seeds several or numerous, in 2 rows in each cell, marginless. Cotyledons accumbent. Filaments not toothed.—Low herbs with entire or toothed leaves, and white or yellow flowers; pubescence often stellate. (Name from *δράβη*, applied by Dioscorides to some cress; meaning unknown.)

§ 1. DRABÆA. *Petals not notched or cleft; perennial or biennial, leafy-stemmed; flowers white; pods twisted when ripe.*

1. *D. incana*, L. *Hoary-pubescent*, biennial or somewhat perennial, the radical tuft seldom branching; leaves oblanceolate or the cauline lanceolate to ovate, few-toothed or entire; *pods oblong to lanceolate, usually acute and straight, often pubescent*, on short erect pedicels; style very short or none.—Dry rocks, Anticosti and N.B., and far westward. (Eu.)

Var. *arabisans*, Watson. Caudex much branched; pod glabrous, acuminate or acute, twisted, beaked with a longer distinct style. (*D. arabisans*, Michx.)—Anticosti and Lake Nipigon.

5. NASTURTIUM, R. Br. WATER CRESS.

Pod a short silique or a silicle, varying from oblong-linear to globular, terete or nearly so; valves strongly convex, nerveless. Seeds usually numerous, small, turgid, marginless, in 2 irregular rows in each cell (except in *N. sylvestre*). Cotyledons accumbent.—Aquatic or marsh plants, with yellow or white flowers, and commonly pinnate or pinnatifid leaves, usually glabrous. (Name from *Nasus tortus*, a convulsed nose, alluding to the effect of its pungent qualities.)

§ 1. *Petals white, twice the length of the calyx; pods linear; leaves pinnate.*

1. **N. officinale**, R. Br. TRUE WATER CRESS. Perennial; stems spreading and rooting; leaflets 3-11, roundish or oblong, nearly entire; pods (6-8" long) ascending on slender widely spreading pedicels.—Brooks and ditches; escaped from cultivation. N.S. to Ont. (Nat. from Eu.)

§ 2. *Petals yellow or yellowish, seldom much exceeding the calyx; pods linear, oblong, or even ovoid or globular; leaves mostly pinnatifid.*

* *Annual or biennial, rarely perennial (?), with simple fibrous roots; flowers small or minute, greenish or yellowish; leaves somewhat lyrate.*

2. **N. palustre**, DC. MARSH CRESS. Stem erect; leaves pinnately cleft or parted, or the upper laciniate; the lobes oblong, cut-toothed; pedicels about as long as the small flowers and mostly longer than the oblong, ellipsoid, or ovoid pods; style short.—Wet places or in shallow water; common. June-Sept.—Flowers only 1-1½" long. Stems 1-3° high.—The typical form with oblong pods is rare. Short pods and hirsute stems and leaves are common.

6. **BARBAREA**, R. Br. WINTER CRESS.

Pod linear, terete or somewhat 4-sided, the valves being keeled by a mid-nerve. Seeds in a single row in each cell, marginless. Cotyledons accumbent.—Mostly biennials, resembling *Nasturtium*; flowers yellow. (Anciently called the Herb of St. Barbara.)

1. **B. vulgaris**, R. Br. COMMON WINTER CRESS. YELLOW ROCKET. Smooth; lower leaves lyrate, the terminal division round and usually large, the lateral 1-4 pairs or rarely wanting; upper leaves obovate, cut-toothed, or pinnatifid at the base; pods erect or slightly spreading; or in var. *STRICTA*, appressed; in var. *ARCUATA*, ascending on spreading pedicels.—Low grounds and roadsides; apparently introduced, but indigenous from N.S. to Ont. northward and westward. (Eu.)

7. **ERYSIMUM**, Tourn. TREACLE MUSTARD.

Pod linear, 4-sided, the valves keeled with a strong midrib; stigma broadly lobed. Seeds in 1 row in each cell, oblong, marginless. Cotyledons (often obliquely) incumbent.—Chiefly biennials, with

yellow flowers ; the leaves not clasping. Pubescence of appressed 2-3-parted hairs. (Name from *ἐπίω*, to draw blisters.)

1. **E. cheiranthoides**, L. WORM-SEED MUSTARD. Minutely roughish, branching, slender ; leaves lanceolate, scarcely toothed ; flowers small ; *Pods small and short* (7-12" long), very obtusely angled, ascending on slender *divergent pedicels*.—Banks of streams, July. (Eu.)

8. **BRASSICA**, Arn. BRASSICA AND SINAPIS.

Pod linear or oblong, nearly terete or 4-sided, with a stout 1-seeded beak or a rigid style ; valves 1-5-nerved. Seeds globose, 1-rowed. Cotyledons incumbent, folded around the radicle.—Annuals or biennials, with yellow flowers. Lower leaves mostly lyrate, incised, or pinnatifid. (The Latin name of the Cabbage. Sinapis is the Greek *σίναπι*, which is said to come from the Celtic *nap*, a turnip.)

1. **B. Sinapistrum**, Boiss., or SINAPIS ARVENSIS, L., the English CHARLOCK, with knotty pods, fully one-third occupied by a stout 2-edged beak (which is either empty or 1-seeded), the upper leaves barely toothed, is a noxious weed in grain fields, from N. B. to Ont. (Adv. from Eu.)

2. **B. (or SINAPIS) alba**, Boiss. WHITE MUSTARD. Pods bristly, ascending on spreading pedicels, more than half its length occupied by the sword-shaped 1-seeded beak ; leaves all pinnatifid ; seeds pale. N. B. to Ont. (Cult. and adv. from Eu.)

3. **B. (or SINAPIS) nigra**, Koch. BLACK MUSTARD. Pods smooth ($\frac{1}{2}$ long), 4-cornered (the valves only 1-nerved), erect on appressed pedicels forming a slender raceme, tipped with a stout persistent style ; seeds dark brown, smaller and more pungent than in the last ; lower leaves with a large terminal lobe and a few small lateral ones.—Fields and waste places, N. S. to Ont. (Adv. from Eu.)

4. **B. campestris**, L., in the form of the RUTABAGA and the TURNIP, sometimes persists a year or two in neglected grounds.

9. **CAPSELLA**, Medic. SHEPHERD'S PURSE.

Pod obcordate-triangular, flattened contrary to the narrow partition ; the valves boat-shaped, wingless. Seeds numerous.

Cotyledons incumbent.—Annuals ; flowers small, white. (Name a diminutive of *capsa*, a box.)

1. **C. Bursa-pastoris**, Moench. Root-leaves clustered, pinnatifid or toothed ; stem-leaves arrow-shaped, sessile.—Waste places ; the commonest of weeds. April–Sept. (Nat. from Eu.)

10. LEPIDIUM, Tourn. PEPPERWORT. PEPPERGRASS.

Pod roundish, much flattened contrary to the narrow partition ; the valves boat-shaped and keeled. Seeds solitary in each cell, pendulous. Cotyledons incumbent, or in n. 1 accumbent ! Flowers small, white or greenish. (Name from *λεπίδιον*, a little scale, alluding to the small flat pods.)—Ours are annuals or biennials.

* *Leaves all with a tapering base, the upper linear or lanceolate and entire, the lower and often the middle ones incised or pinnatifid ; pods orbicular or oval, with a small notch at the top ; the style minute or none ; stamens only 2.*

1. **L. Virginicum**, L. WILD PEPPERGRASS. *Cotyledons accumbent and seed minutely margined ; pod marginless or obscurely margined at the top ; petals present, except in some of the later flowers.*—June–Sept. A common roadside weed, Q. and Ont., which has immigrated from farther south.

2. **L. intermedium**, Gray. *Cotyledons incumbent ; pod minutely wing-margined at the top ; petals usually minute or wanting ; otherwise nearly as in n. 1.*—Dry places, from western N.S. to B.C.

11. CAKILE, Tourn. SEA-ROCKET.

Pod short, 2-jointed across, fleshy, the upper joint separating at maturity ; each indehiscent, 1-celled and 1-seeded, or the lower sometimes seedless. Seed erect in the upper, suspended in the lower joint. Cotyledons obliquely accumbent.—Seaside fleshy annuals. Flowers purplish. (An old Arabic name.)

1. **C. Americana**, Nutt. AMERICAN SEA-ROCKET. Leaves obovate, sinuate and toothed ; lower joint of the fruit obovoid, emarginate ; the upper ovate, flattish at the apex. N. S. to Ont. July–Sept.—Joints nearly even and fleshy when fresh ; the upper one 4-angled and appearing more beaked when dry.

12. **RAPHANUS**, Tourn. **RADISH.**

Pods linear or oblong, tapering upward, indehiscent, several seeded, continuous and spongy within between the seeds, or necklace-form by constriction between the seeds, with no proper partition. Style long. Seeds spherical and cotyledons conduplicate, as in *Brassica*.—Annuals or biennials. (The ancient Greek name from *ῥα*, *quickly*, and *φαίω*, *to appear*, alluding to the rapid germination.)

1. **R. raphanistrum**, L. **WILD RADISH. JOINTED CHARLOCK.** Pods necklace-form, long-beaked; leaves lyre-shaped, rough; petals yellow, turning whitish or purplish, veiny.—A troublesome weed in fields, N.S. to Ont. (Adv. from Eu.)

ORDER 9. **CISTACEÆ** (ROCK-ROSE FAMILY).

Low shrubs or herbs, with regular flowers, distinct and hypogynous mostly indefinite stamens, a persistent calyx, a 1-celled 3-5-valved capsule with as many parietal placentæ borne on the middle of the valves, and orthotropous albuminous seeds.—Sepals 5; the two external much smaller, bract-like, or sometimes wanting; the three others a little twisted in the bud. Petals 3 or 5, convolute in the opposite direction from the calyx in the bud. Anthers short, innate, on slender filaments. Style single or none. Ovules few or many, on slender stalks, with the orifice at the apex. Embryo long and slender, straightish or curved, in mealy albumen; cotyledons narrow.—Leaves simple and mostly entire, the lower usually opposite, and the upper alternate. Inert plants.

1. **Helianthemum**. Petals 5, crumpled in the bud, fugacious (or none). Stigma nearly sessile. Stamens and ovules numerous in the petal-bearing flowers.
2. **Hudsonia**. Petals 5, fugacious. Stamens 9-30. Style long and slender. Pod strictly 1-celled, 2-6-seeded. Heath-like.

1. **HELIANTHEMUM**, Tourn. **ROCK-ROSE.**

Petals 5, crumpled in the bud, fugacious. Styles short or none in our species; stigma 3-lobed. Capsule strictly 1-celled. Embryo curved in the form of a hook or ring.—Flowers in most N. American species of two sorts, viz., *primary* or earlier ones, with large petals, indefinitely numerous stamens and many-seeded pods; and *secondary*, or *later* ones, which are much smaller and in clusters, with small petals or none, 3-10 stamens, and much smaller 3-few-seeded

Pods. The yellow flowers open only once, in sunshine, and cast their petals by the next day. (Name from *ἥλιος*, the sun, and *ἄνθεμον*, flower.)

1. **H. Canadense**, Michx. FROST-WEED. *Petal-bearing flowers solitary; the small secondary flowers clustered in the axils of the leaves, nearly sessile; calyx of the large flowers hairy-pubescent, of the small ones hoary, like the stem and lower side of the lanceolate-oblong leaves.*—Sandy or gravelly dry soil, Maine and Ont. June–Aug.—Stems at first simple. Corolla of the large flowers 1' wide, producing pods 3" long; pods of the smaller flowers not larger than a pin's head.

2. HUDSONIA, L.

Petals 5, fugacious (lasting but a day), much larger than the calyx. Stamens 9–30. Style long and slender; stigma minute. Pod oblong, enclosed in the calyx, strictly 1-celled, with 1 or 2 seeds attached near the base of each nerve-like placenta. Embryo coiled into the form of a closed hook.—Bushy heath-like little shrubs (seldom a foot high), covered all over with the small awl-shaped or scale-like alternate persistent downy leaves, producing numerous (small but showy) bright yellow flowers crowded along the upper part of the branches. (Named in honor of *Wm. Hudson*, an early English botanist.)

1. **H. tomentosa**, Nutt. Hoary with down; leaves oval or narrowly oblong, 1" long, close-pressed and imbricated; flowers sessile or some short peduncled.—Sandy shores, N.S., and along the Great Lakes to Minn. and westward; rarely on banks of streams inland. May, June.

ORDER 10. VIOLACEÆ (VIOLET FAMILY).

Herbs, with a somewhat irregular 1-spurred corolla of 5 petals, 5 hypogynous stamens with adnate introrse anthers conniving over the pistil, and a 1-celled 3-valved pod with 3 parietal placentæ.—Sepals 5, persistent. Petals imbricated in the bud. Stamens with their short and broad filaments continued beyond the anther-cells, and often coherent with each other. Style usually club-shaped, with the simple stigma turned to one side. Valves of the capsule bearing the several-seeded placentæ on their middle; after opening, each valve as it dries folds together lengthwise firmly, projecting

the seeds. Seeds anatropous, rather large, with a hard seed-coat, and a large and straight embryo nearly as long as the albumen; cotyledons flat.—Leaves alternate, with stipules. Flowers axillary, nodding. (Roots slightly acrid or emetic.)

1. *Viola*. Sepals auricled. Lower petal spurred. Stamens distinct, the 2 lower spurred.

1. *VIOLA*, Tourn. VIOLET. HEART'S-EASE.

Sepals extended into ears at the base. Petals somewhat unequal, the lower one spurred at the base. Stamens closely surrounding the ovary, often slightly cohering with each other; the two lower bearing spurs which project into the spur of the corolla. Besides these conspicuous blossoms, which appear in spring, others are produced later (especially in the stemless species), on shorter peduncles or on runners, usually concealed under the leaves; these never open nor develop petals, but are fertilized in the bud, and are far more fruitful than the ordinary blossoms. (The ancient Latin name of the genus.)

§ 1. *Perennials*; stipules never leaf-like, the lower more or less scarious.

* *Stemless, the leaves and scapes directly from a rootstock or from runners.*

† *Stigma small, naked, often beaked or pointed.*

‡ *Rootstock fleshy and thickened, never filiform nor producing runners; flowers violet or purple (rarely white); lateral petals bearded.*

1. *V. palmata*, L. COMMON BLUE V. Glabrous to villous-pubescent; early leaves roundish-cordate or reniform and merely crenate, the sides rolled inward when young, the latter very various, palmately or pedately or hastately lobed or parted, the segments obovate to linear. (*V. cucullata*, var. *palmata*, Gray.)—Moist or dryish, especially sterile, ground; very common.

Var. *cucullata* (Gray). Later leaves merely crenate, not lobed, (*V. cucullata*, *Ait.*)—Low grounds; common everywhere. Both forms are very variable in the size and shape of the leaves and sepals, and in the size and color of the flowers, which are deep or pale violet-blue or purple, sometimes white or variegated with white.

‡ ‡ *Rootstocks long and filiform, extensively creeping.*

|| *Flowers blue or purple.*

2. **V. Selkirkii**, Pursh. GREAT-SPURRED V. Small and delicate; the filiform rootstock fibrose-rooted, no runners above ground; smooth, except the round-heart-shaped crenate leaves, which are minutely hairy on the upper surface and have a deep narrowed sinus; *spur very large*, thickened at the end, almost as long as the beardless pale violet petals.—Damp and shady soil, N.B. to Ont. and northward; rare.—Scapes and petioles 1-2', the leaf $\frac{1}{2}$ -1 $\frac{1}{4}$ ' long, thin; the spur 3" long. (Eu.)

||| *Flowers white (small, short-spurred), mostly with brown-purple veins; lateral petals bearded or beardless. Species apparently confluent.*

3. **V. blanda**, Willd. SWEET WHITE V. Commonly glabrous; leaves round-heart-shaped or kidney-form; petals mostly beardless, the lower strongly veined.—Damp places, everywhere. Flowers faintly sweet-scented.

|||| *Flowers yellow.*

4. **V. rotundifolia**, Michx. ROUND-LEAVED VIOLET. Leaves round-ovate, heart-shaped, slightly crenate; lateral petals bearded and marked with brown lines; spur very short.—Cold woods, N.S. and Q.—Smoothish; leaves 1' broad at flowering, increasing to 3 or 4' in the summer, then lying flat on the ground, shining above.

** *Leafy-stemmed; all perennial with short rootstocks.*

+ *Stems erect, without root-leaves; stipules entire; spur very short; stigma beakless, pubescent.*

‡ *Stems naked below; flowers yellow.*

5. **V. pubescens**, Ait. DOWNY YELLOW V. Softly pubescent (6-12' high); leaves very broadly heart-shaped, toothed, somewhat pointed; stipules ovate or ovate-lanceolate, large; lower petals veined with purple, capsule oblong to globular, glabrous or tomentose.—Woods; common.

‡‡ *Stems more leafy and prolonged; flowers white or purplish.*

6. **V. Canadensis**, L. CANADA V. Upright (1-2' high); leaves heart-shaped, pointed, serrate; stipules ovate-lanceolate, entire; petals white or whitish inside, the upper ones mostly tinged with violet beneath, the lateral bearded.—Rich woods; common northward and along the Alleghanies. May-Aug.

†† *Stems erect or spreading (at first nearly acaulescent); stipules fringe-toothed; spur oblong to cylindrical; stigma naked.*

7. **V. canina**, L., var. **Muhlenbergii**, Gray. Dog V. Low (3-8' high), mostly glabrous; stems ascending, mostly simple, from the base at length producing creeping branches; leaves heart-shaped, or the lowest kidney-form, crenate, the uppermost slightly pointed; stipules lanceolate; *spur cylindrical, half the length of the light violet petals*, the lateral ones slightly bearded; stigma beaked. —Damp or wet shady places; common. May-July. (Eu.)

ORDER 11. CARYOPHYLLACEÆ (PINK FAMILY).

Herbs, with opposite entire leaves, symmetrical 4-5-merous flowers, with or without petals; the distinct stamens no more than twice the number of the sepals, either hypogynous or perigynous; styles 2-5 (or rarely united into one); seeds several or usually many, attached to the base or to the central column of the 1-celled (rarely 3-5-celled) pod, with a slender embryo coiled or curved around the outside of mealy albumen, in Dianthus nearly straight.—Bland herbs; the stems usually swollen at the joints; uppermost leaves rarely alternate. Leaves often united at the base. Calyx persistent. Styles stigmatic along the inside. Seeds amphitropous or campylotropous.

Tribe I. SILENEÆ. Sepals united into a tube or cup. Petals (mostly convolute in the bud) and stamens (10) borne on the stipe or stock of the ovary, the former with slender claws, to the base of which the corresponding filaments often adhere, included in the calyx-tube. Seeds numerous.—Stipules none. Flowers often large and showy.

* Calyx naked. Seeds globular or kidney-shaped; embryo curved or coiled.

1. **Silene**. Calyx 5-toothed, 10-nerved. Styles 3.

2. **Lychnis**. Calyx 5-toothed, 10-nerved. Styles 5, rarely 4.

Tribe II. ALSINEÆ. Sepals distinct or nearly so, imbricated in the bud. Petals when present without claws, mostly imbricated, and with the stamens inserted at the base of the sessile ovary, or into a little disk. Pod splitting into valves or teeth, several-many-seeded. Stamens opposite the sepals, when not more in number.—Low herbs.

* Stipules none.

† Styles opposite the sepals, or, when fewer, opposite those which are exterior in the bud.

‡ Pod short, splitting into as many valves as styles; valves often bifid or 2-parted.

3. **Arenaria**. Petals entire. Styles usually 3. Valves of the pod entire, bifid, or 2-parted.

4. **Stellaria**. Petals 2-cleft or none. Styles usually 3. Valves bifid or 2-parted.

;; Pod cylindrical, dehiscent by twice as many teeth as styles.

5. *Cerastium*. Petals notched or 2-cleft. Styles 5 or 4. Seeds fixed edgewise.

** Stipules present. Pod short.

6. *Buda*. Styles 3. Pod 3-valved. Leaves opposite.

1. *SILENE*, L. CATCHFLY. CAMPION.

Calyx 5-toothed, 10-many-nerved, naked at the base. Stamens 10. Styles 3, rarely 4. Pod 1-celled, sometimes 3 celled at least at the base, opening by 3 or 6 teeth at the apex.—Flowers solitary or in cymes. Petals mostly crowned with a scale at the base of the blade. (Name from *σάλις*, *saliva*, from the viscid exudation on the stems and calyx of many species. The English name *Catchfly* alludes to the same peculiarity.)

* *Calyx not inflated, except by the enlarging pod; annuals.*

+ *Glabrous, a portion of each joint of the stem glutinous; flowers pink.*

1. *S. antirrhina*, L. SLEEPY C. Stem slender (8-30' high); leaves lanceolate or linear; flowers small, paniculate; calyx ovoid; petals obcordate, crowned, opening transiently in sunshine.—Dry soil; common in waste places. Ottawa and westward. June-Sept.

++ *Viscid-pubescent; flowers white or nearly so, opening at night, sweet-scented.*

2. *S. noctiflora*, L. NIGHT-FLOWERING C. Viscid-hairy, tall (1-3° high); lower leaves large and spatulate, the upper lanceolate; flowers few, peduncled; calyx-tube elongated (over 1' long), soon ovoid, with awl-shaped teeth; petals rather large, 2-parted, crowned.—Cultivated grounds. N.B. and westward.

2. *LYCHNIS*, Tourn. COCKLE.

Styles 5, rarely 4, and pod opening by as many or twice as many teeth; otherwise nearly as in *Silene*. Calyx in one species with leaf-like lobes. (Ancient Greek name for a scarlet or flame-colored species, from *λύχνος*, a light or lamp.)

1. *L. Githago*, Lam. CORN COCKLE. Annual, clothed with long soft appressed hairs; flowers long-peduncled; calyx-lobes similar to the long and linear leaves, surpassing the broad and crownless purple-red petals, falling off in fruit. (*Agrostemma Githago*, L.)—In wheat fields. (Adv. from Eu.)

2. **L. Flos-cuculi**, L. **RAGGED ROBIN**. Perennial, erect, slightly downy below, viscid above; leaves narrowly lanceolate; flowers in loose panicles; calyx short, glabrous; petals red, 4-lobed, lobes linear.—Moist or marshy places; N.B., New Eng. and N.Y. (Adv. from Eu.)

3. **ARENARIA**, L. **SANDWORT**.

Sepals 5. Petals 5, entire, sometimes barely notched, rarely wanting. Stamens 10. Styles 3, rarely more or fewer, opposite as many sepals. Pod short, splitting into as many or twice as many valves as there are styles, few-many-seeded.—Low, usually tufted herbs, with sessile exstipulate leaves and small white flowers. (Name from *arena*, sand, in which many of the species grow.)—The following sections are by many botanists taken for genera.

§ 1. **ARENARIA** proper. *Pod splitting wholly or part-way down into 3 or at length into 6 valves; seeds many, naked at the hilum.*

1. **A. serpyllifolia**, L. **THYME-LEAVED SANDWORT**. Diffusely branched, roughish (2-6' high); leaves ovate, acute, small; cymes leafy; sepals lanceolate, pointed, 3-5-nerved, about equalling the petals and 6-toothed pod.—A low annual; sandy waste places. N.S. to Ont. June-Aug. (Nat. from Eu.)

§ 2. **ALSINE**. *Pod splitting to the base into 3 entire valves; seeds many, usually rough, naked at the hilum; flowers solitary and terminal or cymose; root in our species perennial.*

* *Leaves small, rigid, awl-shaped or bristle-shaped.*

2. **A. verna**, L. **Dwarf, alpine, densely matted, glabrous or** (var. **HIRTA**) somewhat pubescent, 1-3' high; leaves narrowly linear or awl-shaped; flowers loosely cymose; sepals lanceolate, pointed, 3-nerved, shorter than the pod. Lab. to B.C. (Eu.)

* * *Leaves soft and herbaceous, filiform-linear; petals retuse or notched.*

3. **A. Grœnlandica**, Spreng. **MOUNTAIN S.** Densely tufted from slender roots, smooth; flowering stems filiform, erect (2-4' high), few-flowered; *sepals oblong, obtuse, nerveless*.—Summit of the Shawangunk, Catskill, and Adirondack Mountains, N.Y., of the higher mountains of New Eng., and northward; alpine or sub-

alpine. June-Aug.—Leaves and peduncles 3-6" long; flowers large in proportion.

§ 3. *MÖHRINGIA*. *Parts of the flower sometimes in fours; pod as in § 1, but the young ovary 3-celled; seeds rather few, smooth, with a thickish appendage (strophiole) at the hilum; perennials, with flaccid broadish leaves.*

4. *A. lateriflora*, L. Sparingly branched, erect, minutely pubescent; leaves oval or oblong, obtuse ($\frac{1}{2}$ -1' long); peduncles 2- (rarely 3-4) flowered, soon becoming lateral; sepals oblong, obtuse.—Gravelly shores, etc., N.S. to B.C. May, June. (Eu.)

4. *STELLARIA*, L. CHICKWEED. STARWORT.

Sepals 4-5. Petals 4-5, deeply 2-cleft, sometimes none. Stamens 8, 10, or fewer. Styles 3, rarely 4 or 5, opposite as many sepals. Pod ovoid, 1-celled, opening by twice as many valves as there are styles, several-many-seeded. Seeds naked.—Flowers (white) solitary or cymose, terminal, or appearing lateral by the prolongation of the stem from the upper axils. (Name from *stella*, a star, in allusion to the star-shaped flowers.)

* *Stems spreading, flaccid, marked longitudinally with one or two pubescent lines; leaves ovate or oblong, $\frac{1}{2}$ -2 $\frac{1}{2}$ ' long.*

1. *S. media*, Smith. COMMON CHICKWEED. Annual or nearly so; lower leaves on hairy petioles; petals shorter than the calyx, 2-parted, stamens 3-10.—Everywhere in damp grounds. (Nat. from Eu.)

** *Stems erect or spreading; wholly glabrous perennials, with sessile and narrow or small leaves; stamens usually 10, perigynous.*

† *Scaly-bracted; petals 2-parted, equalling or surpassing the calyx.*

2. *S. longifolia*, Muhl. LONG-LEAVED STITCHWORT. Stem erect, weak, often with rough angles (8-18' high); leaves linear, acutish at both ends, spreading; cymes naked and at length lateral, peduncled, many-flowered, the slender pedicels spreading; petals 2-parted, longer than the calyx; seeds smooth.—Grassy places; common, especially northward. June, July. (Eu.)

3. *S. longipes*, Goldie. LONG-STALKED S. Shining or somewhat glaucous, very smooth; leaves ascending, lanceolate or linear-lanceolate, acute, broadest at the base, rather rigid; cyme terminal,

few-flowered, the long *pedicels strictly erect*; petals longer than the calyx; seeds smooth.—N. S. to B. C. (Eu.)

4. *S. uliginosa*, Murr. SWAMP S. Stems weak, decumbent or diffuse, at length prolonged, leaving the naked and usually *sessile cymes lateral*; leaves lanceolate or oblong, veiny; petals and ripe pods as long as the calyx; seeds roughened.—Swamps and rills, N. S., westward. (Eu.)

5. CERASTIUM, L. MOUSE-EAR CHICKWEED.

Sepals 5, rarely 4. Petals as many, 2-lobed or cleft, rarely entire. Stamens twice as many, or fewer. Styles equal in number to the sepals and opposite them. Pod 1-celled, usually elongated, membranaceous, opening at the apex by twice as many teeth as there were styles, many-seeded. Seeds rough.—Flowers white, in terminal cymes. Our species have the petals 2-cleft or obcordate, the parts of the flower always in fives, and the exserted pods more or less curved. (Name from *κέρας*, a horn, alluding to the shape of the pod in many species.)

1. *C. viscosum*, L. MOUSE-EAR CHICKWEED. Annual, hairy and rather clammy, nearly erect (4-9' high); leaves or obovate to oblong spatulate; bracts herbaceous; flowers in close clusters at first, *pedicels even in fruit not longer than the acute sepals*; petals shorter than the calyx. (*C. vulgatum*, L. *Herb.*, and *Man.*) Grassy places, N. S. to B. C. May-July.—Stamens often 5. (Nat. from Eu.)

2. *C. vulgatum*, L. LARGER M. Perennial; stems clammy-hairy, spreading (6-15' long); leaves oblong; upper bracts scarious-margined; flowers larger (sepals 2-3' long), at first clustered, the fruiting *pedicels* longer, the earlier ones mostly much longer than the obtuse sepals; petals equalling the calyx. (*C. viscosum*, L. *Herb.*, and *Man.* *C. triviale*, Link.)—Fields and copses; N. B. and Ont., perhaps indigenous. May-July. (Nat. from Eu.)

3. *C. arvense*, L. FIELD CHICKWEED. Perennial; stems ascending or erect, tufted, downy or nearly smooth, slender (4-8' high), naked and few-several-flowered at the summit; leaves linear or narrowly lanceolate; petals obcordate, more than twice the length of the calyx; pods scarcely longer than the calyx.—Dry or rocky places, Lab., westward. May-July. (Eu.)

6. BUDA, Adans. SAND-SPURRY.

Sepals 5. Petals 5, entire. Stamens 2-10. Styles and valves of the many-seeded pod 3, very rarely 5, when the valves alternate with the sepals! Embryo not coiled into a complete ring.—Low herbs, mostly on or near the sea-coast, with filiform or linear somewhat fleshy opposite leaves, and smaller ones often clustered in the axils; stipules scaly-membranaceous; flowering all summer. (Named probably for the city so called.)—Genus also known as TISSA, Adans., SPERGULARIA, Presl., and LEPIGONUM, Wahlb.

1. *B. rubra*, Dumort. Nearly glabrous, the summit of the prostrate or ascending slender stems, peduncles, and sepals usually glandular-pubescent; leaves linear, flat, scarcely fleshy; stipules lanceolate, entire or cleft; pedicels longer than the bracts; pods and pink-red corolla small ($1\frac{1}{2}$ "), hardly equalling or exceeding the calyx; seeds rough with projecting points, semi-obovate or gibbous-wedge-shaped, wingless. (*Spergularia rubra*, Presl.)—Dry sandy soil, near the coast, but rarely maritime. N.S., N.B. and Q. (Eu.)

2. *B. marina*, Dumort. More decidedly fleshy than the preceding, erect or ascending, usually pubescent, with ovate stipules, terete leaves, and pedicels 2-4" long; sepals usually becoming 2-2 $\frac{1}{2}$ " long, little shorter than the pod; petals pale; seeds obovate-rounded and roughened with points, wingless or narrow-winged. (*Spergularia salina*, Presl. *Tissa marina*, Britt.)—Brackish sands, etc., coast of Lab., N.S., N.B. and Q., and southwa. A. (Eu.)

ORDER 12. PORTULACACEÆ (PURSLANE FAMILY).

Herbs, with succulent leaves, and regular but unsymmetrical flowers, viz., sepals fewer than the petals; the stamens opposite the petals when of the same number, but often indefinite; otherwise nearly as Chickweeds.—Sepals 2. Petals 5, or sometimes none. Stamens mostly 5-20. Styles 2-8, united below, or distinct, stigmatic along the inside. Pod 1-celled, with few or many campylotropous seeds rising on stalks from the base. Embryo curved around mealy albumen.—Insipid and innocent herbs, with entire leaves. Corolla opening only in sunshine, mostly ephemeral, then shrivelling.

1. *Portulaca*. Stamens 7-20, on the partly adherent calyx. Pod opening by a lid.
2. *Claytonia*. Stamens as many as the hypogynous petals, and attached to their base. Calyx persistent. Pod 3-6-seeded.

1. PORTULACA, Tourn. PURSLANE.

Calyx 2-cleft; the tube cohering with the ovary below. Petals 5, rarely 6, inserted on the calyx with the 7-20 stamens, fugacious. Style mostly 3-8 parted. Pod 1-celled, globular, many-seeded, opening transversely, the upper part (with the upper part of the calyx) separating as a lid.—Fleshy annuals, with mostly scattered leaves. (An old Latin name, of unknown meaning.)

1. *P. oleracea*, L. COMMON PURSLANE. Prostrate, very smooth; leaves obovate or wedge-form; flowers sessile (opening only in sunny mornings); sepals keeled; petals pale yellow; stamens 7-12; style deeply 5-6-parted, flower-bud flat and acute.—Cultivated and waste grounds; common. Seemingly indigenous west and southwestward. (Nat. from Eu.)

2. CLAYTONIA, Gronov. SPRING-BEAUTY.

Sepals 2, ovate, free, persistent. Stamens 5, adhering to the short claws of the petals. Style 3-cleft at the apex. Pod 1-celled, 3-valved, 3-6-seeded.—Our two species are perennials, sending up simple stems in early spring from a small deep tuber, bearing a pair of opposite leaves, and a loose raceme of pretty flowers. Corolla rose-color with deeper veins, opening for more than one day! (Named in honor of *Dr. John Clayton*, one of our earliest botanists, who contributed to Gronovius the materials for the *Flora Virginica*.)

1. *C. Virginica*, L. Leaves linear-lanceolate, elongated (3-6' long).—Moist open woods; common, N.S., westward and southward.

2. *C. Caroliniana*, Michx. Flowers rather smaller and fewer; leaves spatulate-oblong or oval-lanceolate (1-2' long).—N.S., Q. and E. Ont., and southward along the Alleghanies.

ORDER 13. HYPERICACEÆ (ST. JOHN'S-WORT FAMILY).

Herbs or shrubs, with opposite entire dotted leaves and no stipules, regular hypogynous flowers, the petals mostly oblique and convolute in the bud, and many or few stamens commonly collected in 3 or more clusters or bundles. Pod 1-celled with 2-5 parietal placentæ, and as many styles, or 3-7-celled by the union of the placentæ in the centre; dehiscence mostly septicidal.—Sepals 4 or 5, imbricated in the bud,

herbaceous, persistent. Petals 4 or 5, mostly deciduous. Styles persistent, at first sometimes united. Seeds numerous, small, anatropous, with no albumen. Embryo cylindrical.—Plants with a resinous juice, dotted with pellucid or dark glands, usually smooth. Leaves mostly sessile. Flowers solitary or cymose.

* Petals oblique, convolute, yellow; hypogynous glands none.

1. **Hypericum**. Sepals 5, alike. Petals 5. Stamens usually many and in 3 or 5 clusters.

1. **HYPERICUM**, Tourn. ST. JOHN'S-WORT.

Sepals 5, somewhat equal. Petals 5, oblique, convolute in the bud. Stamens commonly united or clustered in 3-5 parcels; no interposed glands. Pod 1-celled or 3-5-celled. Seeds usually cylindrical.—Herbs or shrubs, with cymose yellow flowers. (An ancient Greek name, of obscure meaning.)

§ 1. *Stamens very numerous, obscurely if at all clustered; styles 3, more or less united into one, the stigmas not capitate; sepals mostly foliaceous.*

* *Perennial herbs or a little woody at the base.*

† *Pod 1-celled with 3 parietal placenta.*

1. **H. ellipticum**, Hook. Stem simple, herbaceous (10-20' high), obscurely 4-angled; *leaves spreading, elliptical-oblong*, obtuse, usually narrower toward the subclasping base, thin; cyme nearly naked, rathered few-flowered; *sepals oblong; pods ovoid, very obtuse*; seeds minutely striate.—Wet places, N.S., westward. July, Aug.—Petals light yellow, 3" long.

§ 2. *Stamens very many, in 3 or 5 clusters; styles 3, separate and usually diverging; pod 3-celled; calyx erect; petals and anthers with black dots; perennials.*

2. **H. perforatum**, L. COMMON ST. JOHN'S-WORT. Stem much branched and corymbd, somewhat 2-edged (producing runners from the base); leaves elliptical-oblong or linear-oblong, with pellucid dots; petals (deep yellow) twice the length of the *lanceolate acute sepals*; flowers numerous, in open leafy cymes.—Fields, etc., N.S. to Ont. June-Sept.—Too well known as a pernicious weed, which it is difficult to extirpate. Juice very acrid. (Nat. from Eu.)

3. **H. maculatum**, Walt. Conspicuously marked with both black and pellucid dots; stem terete, sparingly branched; leaves

oblong or lance-ovate, the base either obtuse or somewhat clasping; *flowers crowded* (small); *petals pale yellow*, much longer than the *oblong sepals*, styles mostly not longer than the pod. (*H. corymbosum*, *Muhl.*)—Damp places, N.S. to Ont., common. July–Sept. —Leaves larger and flowers much smaller than in the last; petals 2–3" long, marked with black lines as well as dots. The ordinary northern form differs from the typical southern one in the shorter style and the more oblong less clasping leaves.

§ 3. *Stamens* 5–12, *distinct* or in 3 clusters; *pod* 1-celled, with 3 *strictly parietal placentæ*; *styles* short, *distinct*, with *capitate stigmas*; *petals* oblong or linear; *sepals* narrow, erect; *slender annuals*, with 4-angular branches; *flowering all summer*.

* *Stem* simple or loosely branched; *leaves* linear to ovate, spreading.

4. *H. mutilum*, L. *Stem* flaccid, widely branching (6–20' high); *leaves* ovate to narrowly oblong, obtuse, partly clasping, 5-nerved; *cymes* leafy; *flowers* 2" broad; *Pods* ovate-conical, rather longer than the *calyx*.—Low grounds, everywhere.

5. *H. Canadense*, L. *Stem* strict (6–15' high), with the branches erect; *leaves* linear, 3-nerved at the base, obtuse; *cymes* naked; *flowers* deep yellow, 2–3" broad when expanded; *Pods* conical-oblong, usually much longer than the *calyx*.—Wet, sandy soil; common. June–Oct.

ORDER 14. MALVACEÆ (MALLOW FAMILY).

Herbs or shrubs, with alternate stipulate leaves and regular flowers, the calyx valvate and the corolla convolute in the bud, numerous stamens monadelphous in a column, and united at base with the short claws of the petals, 1-celled anthers, and kidney-shaped seeds.—Sepals 5, united at base, persistent, often involucrellate with a whorl of bractlets forming a sort of exterior calyx. Petals 5. Anthers kidney-shaped, opening along the top. Pistils several, the ovaries united in a ring or forming a several-celled pod. Seeds with little albumen; embryo curved, the leafy cotyledons variously doubled up. Mucilaginous, innocent plants, with tough bark and palmately-veined leaves. Flower-stalks with a joint, axillary.

Tribe I. MALVEÆ. Columns of stamens anther-bearing at the top. Ovaries and carpels 5–20 or more, closely united in a ring around a central axis, from which they separate after ripening.

* Stigmas occupying the inner face of the styles; carpels 1-seeded, falling away separately.

1. **Malva.** Involucel of 3 bractlets. Petals obcordate. Carpels rounded, beakless.

1. MALVA, L. MALLOW.

Calyx with a 3-leaved involucel at the base, like an outer calyx. Petals obcordate. Styles numerous, stigmatic down the inner side. Fruit depressed, separating at maturity into as many 1-seeded and indehiscent round kidney-shaped blunt carpels as there are styles. Radicle pointing downward. (An old Latin name, from the Greek name, *μαλάχη*, having allusion to the emollient leaves.)

* *Flowers fasciated in the axils.*

1. **M. rotundifolia**, L. COMMON MALLOW. *Stems procumbent from a deep biennial root; leaves round-heart-shaped, on very long petioles, crenate, obscurely-lobed; petals twice the length of the calyx, whitish; carpels pubescent, even.—Waysides and cultivated grounds, N. S. to W. Ont., common. (Nat. from Eu.)*

** *Flowers only in the upper axils, somewhat racemose or paniculate.*

2. **M. moschata**, L. MUSK M. A low perennial, with the stem-leaves 5-parted, and the divisions once or twice parted or cleft into linear lobes, faintly musky-scented, the flowers rose-color or white ($1\frac{1}{2}$ in diameter) on short peduncles crowded on the stem and branches, the fruit downy.—Escaped from gardens to waysides, common. (Adv. from Eu.)

ORDER 15. TILIACEÆ (LINDEN FAMILY).

Trees (rarely herbs), with the mucilaginous properties, fibrous bark, valvate calyx, etc., of the Mallow Family; but the sepals deciduous, petals imbricated in the bud, the stamens usually polyadelphous, and the anthers 2-celled. Represented in Northern regions only by the genus,

1. TILIA, Tourn. LINDEN. BASSWOOD.

Sepals 5. Petals 5, spatulate-oblong. Stamens numerous; filaments cohering in 5 clusters with each other (in European species), or with the base of a spatulate petal-like body placed opposite each of the real petals. Pistil with a 5-celled ovary, and 2 half-anatropous ovules in each cell, a single style, and a 5-toothed stigma. Fruit dry and woody, indehiscent-globular, becoming 1-celled and

1-2-seeded. Embryo in hard albumen; cotyledons broad and thin, 5-lobed, crumpled.—Fine trees, with soft and white wood, very fibrous and tough inner bark, more or less heart-shaped and serrate alternate leaves (oblique and often truncate at the base), deciduous stipules, and small cymes of flowers, hanging on an axillary peduncle which is united to a ligulate membranaceous bract. Flowers cream color, honey-bearing, fragrant. (The classical Latin name.)

1. **T. Americana**, L. **BASSWOOD**. Leaves large, green and glabrous or nearly so, thickish; floral bract usually tapering at base; fruit ovoid.—Rich woods; N.B., westward. May, June.—Here rarely called *Lime-tree*, oftener *White-wood*, commonly *Basswood*—the latter name now obsolete in England.

2. **T. Europæa**, L. **THE EUROPEAN LINDEN**, several varieties of which are planted in and near our cities for shade, is at once distinguished from any native species by the absence of the petal-like scales among the stamens. This tree (the *Lin*) gave the family name to *Linnaeus*. N.S. to Ont.

B. DISCIFLORÆ. Stamens as many as the petals or twice as many or fewer, inserted upon or at the outer or inner base of a more or less tumid hypogynous or perigynous disk, which is cushion-like or annular or divided into glands, sometimes obscure or minute (or none in *Linum*, *Ilex*, some *Geraniaceæ* and *Polygala*); ovary superior (or half-inferior in some *Rhamnaceæ*); sepals more usually distinct. Petals wanting in some *Rutaceæ*, *Rhamnaceæ* and *Sapindaceæ*.

ORDER 16. GERANIACEÆ (GERANIUM FAMILY).

Plants (chiefly herbs) with perfect and generally symmetrical hypogynous flowers; the stamens, counting sterile filaments, as many or commonly twice as many, and the lobes or cells (1-few-ovuled) of the ovary as many, as the sepals, the axis of the dry fruit persisting.—Seeds without albumen except in *Oxalis*. Flowers mostly 5-merous and the sepals usually distinct. Leaves never punctate. An order not easily defined, and including several strongly-marked tribes or sub-orders which have been regarded by many botanists as distinct.

Tribe I. GERANIEÆ. (GERANIUM FAMILY proper.) Flowers regular, 5-merous, the sepals imbricate in the bud, persistent. Glands of the disk 5, alternate with the petals. Stamens somewhat united. Ovary deeply lobed; carpels 5, 2-ovuled,

1-seeded, separating elastically with their long styles, when mature, from the elongated axis. Cotyledons plicate, incumbent on the radicle.—Herbs (our species) with more or less lobed or divided leaves, stipules, and astringent roots.

1. **Geranium.** Stamens with anthers 10, rarely 5. The recurving bases of the styles or tails of the carpels in fruit naked inside.

Tribe II. OXALIDÆÆ. (SORREL FAMILY.) Flowers regular, 5-merous, the persistent sepals imbricate. Glands none. Stamens 10, often united at base. Stigmas capitate. Fruit a 5-celled loculicidal pod (in *Oxalis*); cells 2-several-seeded. Embryo straight, in a little fleshy albumen.—Leaves compound (3-foliolate in our species); juice sour.

2. **Oxalis.** Styles 5, separate. Pod oblong; the valves not falling away. Leaflets usually obovate.

Tribe III. BALSAMINÆÆ. (BALSAM FAMILY.) Flowers irregular (5-merous as to the stamens and pistil), the petals and colored sepals fewer in number, deciduous, the larger sepal with a large sac or spur. Glands none. Stamens 5, distinct, short. Fruit a fleshy 5-celled pod (in *Impatiens*); cells several-seeded. Embryo straight.—Tender and very succulent herbs, with simple leaves and no stipules.

3. **Impatiens.** Lateral petals unequally 2-lobed. Pod bursting elastically into 5 valves.

1. GERANIUM, Tourn. CRANESBILL.

Stamens 10 (sometimes only 5 in n. 3), all with perfect anthers, the 5 longer with glands at their base (alternate with the petals). Styles smooth inside in fruit when they separate from the axis.—Stems forking. Peduncles 1-3-flowered. (An old Greek name, from γέρας, *a crane*; the long fruit-bearing beak thought to resemble the bill of that bird.)

* *Rootstock perennial.*

1. **G. maculatum, L.** WILD CRANESBILL. Stem erect, hairy; leaves about 5-parted, the wedge-shaped divisions lobed and cut at the end; sepals slender-pointed; petals entire, light purple, bearded on the claw ($\frac{1}{2}$ ' long).—Open woods and fields, N.S. to Ont. and westward. April–July.—Leaves somewhat blotched with whitish as they grow old.

** *Root biennial or annual; flowers small.*

† *Leaves ternately much-dissected; heavy scented.*

2. **G. Robertianum, L.** HERB ROBERT. Sparsely hairy, diffuse, strong-scented; leaves 3-divided or pedately 5-divided, the divisions twice pinnatifid; sepals awned, shorter than the (red-purple) petals; carpels wrinkled; seeds smooth.—Moist woods and shaded ravines; N.S., Ont. and westward. June–Oct. (Eu.)

†† *Leaves palmately lobed or dissected.*

3. *G. Carolinianum*, L. Stems at first erect, diffusely branched from the base, hairy; leaves about 5-parted, the divisions cleft and cut into numerous oblong-linear lobes; peduncles and pedicels short; *sepals awn-pointed*, as long as the emarginate (pale rose-colored) petals; carpels hairy; *seeds ovoid-oblong, very minutely reticulated*.—Barren soil and waste places; common. May–Aug.

2. OXALIS, L. WOOD-SORREL.

Sepals 5, persistent. Petals 5, sometimes united at base, withering after expansion. Stamens 10, usually monadelphous at base, alternately shorter. Styles 5, distinct. Pod oblong, membranaceous, 5-celled, more or less 5-lobed, each cell opening on the back; valves persistent, being fixed to the axis by the partitions. Seeds 2 or more in each cell, pendulous from the axis, anatropous, their outer coat loose and separating. Embryo large and straight in fleshy albumen; cotyledons flat.—Herbs, with sour watery juice, alternate or radical leaves, mostly of 3 obcordate leaflets, which close and droop at nightfall. Several species produce small peculiar flowers, precociously fertilized in the bud and particularly fruitful; and the ordinary flowers are often dimorphous or even trimorphous in the relative length of the stamens and styles. (Name from *ὄξις*, sour.)

* *Stemless perennials; leaves and scapes arising from a rootstock or bulb; leaflets broadly obcordate; flowers nearly 1' broad; cells of the pod few-seeded.*

1. *O. Acetosella*, L. COMMON WOOD-SORREL. *Rootstock creeping and scaly-toothed; scape 1-flowered (2–5' high); petals white with reddish veins, often notched*.—Deep cold woods, N.S. to L. Superior, and northward. June. (Eu.)

3. IMPATIENS, L. BALSAM. JEWEL-WEED.

Calyx and corolla colored alike and not clearly distinguishable. Sepals apparently only 4; the anterior one notched at the apex and probably consisting of two combined; the posterior one (appearing anterior as the flower hangs on its stalk) largest, and forming a spurred sac. Petals 2, unequal-sided and 2-lobed (each consisting of a pair united). Stamens 5, short; filaments append-

aged with a scale on the inner side, the 5 scales connivent and united over the stigma; anthers opening on the inner face. Ovary 5-celled; stigma sessile. Pod with evanescent partitions, and a thick axis bearing several anatropous seeds, 5-valved, the valves coiling elastically and projecting the seeds in bursting. Embryo straight; albumen none.—Leaves simple, alternate, without stipules, in our species ovate or oval, coarsely toothed, petioled. Flowers axillary or panicled, often of two sorts, viz.,—the larger ones, which seldom ripen seeds; and very small ones, which are fertilized early in the bud; their floral envelopes never expand, but are forced off by the growing pod and carried upward on its apex. (Name from the sudden bursting of the pods when touched, whence also the popular appellation, *Touch-me-not* or *Snap-weed*.)

1. *I. pallida*, Nutt. PALE TOUCH-ME-NOT. *Flowers pale-yellow, sparingly dotted with brownish-red; sac dilated and very obtuse, broader than long, tipped with a short incurved spur.*—Moist shady places and along rills, in rich soil; Montreal, westward. July–September.—Larger and greener than the next, with larger flowers, and less frequent.

2. *I. fulva*, Nutt. SPOTTED TOUCH-ME-NOT. *Flowers orange-color, thickly spotted with reddish-brown; sac longer than broad, acutely conical, tapering into a strongly inflexed spur half as long as the sac.*—Rills and shady moist places; common, especially southward. June–September.—Plant 2–4° high; the flowers loosely panicled, hanging gracefully on their slender nodding stalks, the open mouth of the cornucopiæ-shaped sepal upward. Spur rarely wanting. Spotless forms of both species occur.

ORDER 17. RUTACEÆ (RUE FAMILY).

Plants with simple or compound leaves, dotted with pellucid glands and abounding with a pungent or bitter-aromatic acrid volatile oil, producing hypogynous almost always regular 3–5-merous flowers, the stamens as many or twice as many as the sepals (rarely more numerous); the 2–5 pistils separate or combined into a compound ovary of as many cells, raised on a prolongation of the receptacle or glandular disk.—Embryo large, curved or straight, usually in fleshy albumen. Styles commonly united or cohering, even when the

ovaries are distinct. Fruit usually capsular. Leaves alternate or opposite. Stipules none.—A large family, chiefly of the Old World and the southern hemisphere.

1. **Xanthoxylum**. Flowers diœcious; ovaries 3-5, separate, forming fleshy pods.

1. **XANTHOXYLUM**, L. PRICKLY ASH.

Flowers diœcious. Sepals 4 or 5, obsolete in one species. Petals 4 or 5, imbricated in the bud. Stamens 4 or 5 in the sterile flowers, alternate with the petals. Pistils 2-5, separate, but their styles conniving or slightly united. Pods thick and fleshy, 2-valved, 1-2-seeded. Seed-coat crustaceous, black, smooth and shining. Embryo straight, with broad cotyledons.—Shrubs or trees, with mostly pinnate leaves, the stems and often the leafstalks prickly. Flowers small, greenish or whitish. (From *ξανθός*, yellow, and *ξύλον*, wood.)

1. **X. Americanum**, Mill. NORTHERN PRICKLY ASH. TOOTHACHE-TREE. Leaves and flowers in sessile axillary umbellate clusters; leaflets 2-4 pairs and an odd one, ovate-oblong, downy when young; calyx none; petals 4-5; pistils 3-5, with slender styles; pods short-stalked.—Rocky woods and river banks; common, Montreal and Ont. April, May.

ORDER 18. **ILICINEÆ** (HOLLY FAMILY).

Trees or shrubs, with small axillary 4-8-merous flowers, a minute calyx free from the 4-8-celled ovary and the 4-8-seeded berry-like drupe; the stamens as many as the divisions of the almost or quite 4-8-petalled corolla and alternate with them, attached to their very base.—Corolla imbricated in the bud. Anthers opening lengthwise. Stigmas 4-8, or united into one, nearly sessile. Seeds suspended and solitary in each cell, anatropous, with a minute embryo in fleshy albumen. Leaves simple, mostly alternate. Flowers white or greenish.

1. **Ilex**. Petals or corolla-lobes oval or obovate. Pedicels mostly clustered.

2. **Nemopanthes**. Petals linear. Pedicels solitary.

1. **ILEX**, L. HOLLY.

Flowers more or less diœciously polygamous. Calyx 4-6-toothed. Petals 4-6, separate, or united only at the base, oval or obovate, obtuse, spreading. Stamens 4-6. The berry-like drupe containing

4-6 little nutlets.—Leaves alternate. Fertile flowers inclined to be solitary and the sterile or partly sterile flowers to be clustered in the axils.

§ 1. **PRINOS.** *Parts of the sterile flowers commonly in fours, fives, or sixes, those of the fertile flowers commonly in sixes (rarely in fives, sevens or eights); nutlets smooth and even; shrubs.*

* *Leaves deciduous; flowers in sessile clusters, or the fertile solitary; fruit bright red.*

1. **I. verticillata**, Gray. **BLACK ALDER. WINTERBERRY.** *Leaves oval, obovate, or wedge-lanceolate, pointed, acute at base, serrate, downy on the veins beneath; flowers all very short-peduncled.*—Low grounds; common, N. S. to Ont. May, June.

2. **NEMOPANTHES**, Raf. **MOUNTAIN HOLLY.**

Flowers polygamo-dioecious. Calyx in the sterile flowers of 4-5 minute deciduous teeth, in the fertile ones obsolete. Petals 4-5, oblong-linear, spreading, distinct. Stamens 4-5; filaments slender. Drupe with 4-5 bony nutlets, light red.—A much-branched shrub, with ash-gray bark, alternate and oblong deciduous leaves on slender petioles, entire or slightly toothed, smooth. Flowers on long slender axillary peduncles, solitary or sparingly clustered. (Name said by the author to mean “flower with a filiform peduncle,” therefore probably composed of *νήμα*, a thread, *πούς*, foot, and *ἄθος*, flower.)

1. **N. fascicularis**, Raf. (*N. Canadensis*, DC.)—Damp cold woods, N.S., Q., and Ont. May.

ORDER 10. CELASTRACEÆ (STAFF-TREE FAMILY).

Shrubs with simple leaves, and small regular flowers, the sepals and the petals both imbricated in the bud, the 4 or 5 perigynous stamens as many as the petals and alternate with them, inserted on a disk which fills the bottom of the calyx and sometimes covers the ovary. Seeds arill'd. Ovules one or few (erect or pendulous) in each cell, anatropous; styles united into one. Fruit 2-5-celled, free from the calyx. Embryo large, in fleshy albumen; cotyledons broad and thin. Stipules minute and fugacious. Pedicels jointed.

* *Leaves alternate. Flowers in terminal racemes.*

1. **Celastrus**, A shrubby climber. Fruit globose, orange, 3-valved. Aril scarlet.

1. CELASTRUS, L. STAFF-TREE. SHRUBBY BITTER-SWEET.

Flowers polygamo-dioecious. Petals (crenulate) and stamens 5, inserted on the margin of a cup-shaped disk which lines the base of the calyx. Pod globose (orange-color and berry-like), 3-celled, 3-valved, loculicidal. Seeds 1 or 2 in each cell, erect, enclosed in a pulpy scarlet aril.—Leaves alternate. Flowers small, greenish, in raceme-like clusters terminating the branches. (An ancient Greek name for some evergreen, which our plant is not.)

1. C. scandens, L. WAX-WORK. CLIMBING BITTER-SWEET. Twining shrub; leaves ovate-oblong, finely serrate, pointed.—Along streams and thickets, Q., Ont., and westward. June.—The opening orange-colored pods, displaying the scarlet covering of the seeds, are very ornamental in autumn.

ORDER 20. RHAMNACEÆ (BUCKTHORN FAMILY).

Shrubs or small trees, with simple leaves, small and regular flowers (sometimes apetalous), with the 4 or 5 perigynous stamens as many as the valvate sepals and alternate with them, accordingly opposite the petals! Drupe or pod with only one erect seed in each cell, not arilled.—Petals folded inwards in the bud, hooded or concave, inserted along with the stamens into the edge of the fleshy disk which lines the short tube of the calyx and sometimes unites it to the lower part of the 2-5-celled ovary. Ovules solitary, anatropous. Stigmas 2-5. Embryo large, with broad cotyledons, in sparing fleshy albumen.—Flowers often polygamous, sometimes dioecious. Leaves mostly alternate; stipules small or obsolete. Branches often thorny. (Slightly bitter and astringent; the fruit often mucilaginous, commonly rather nauseous or drastic.)

* Calyx and disk free from the ovary.

1. **Rhamnus.** Petals small, short-clawed, notched, or none. Drupe berry-like, with 2-4 separate seed-like nutlets.

** Calyx with the disk adherent to the base of the ovary.

2. **Ceanothus.** Petals long-clawed, hooded. Fruit dry, at length dehiscent.

1. RHAMNUS, Tourn. BUCKTHORN.

Calyx 4-5-cleft; the tube campanulate, lined with the disk. Petals small, short-clawed, notched at the end, wrapped around the short stamens, or sometimes none. Ovary free, 2-4 celled.

Drupe berry-like (black), containing 2-4 separate seed-like nutlets, of cartilaginous texture.—Shrubs or small trees, with loosely pinnately veined leaves, and greenish polygamous or diœcious flowers, in axillary clusters: (The ancient Greek name.)

§1. **RHAMNUS** proper. *Flowers usually diœcious; nutlets and seeds deeply grooved on the back; rhaphe dorsal; cotyledons foliaceous, the margins revolute.*

* *Calyx-lobes and stamens 5; petals wanting.*

1. **R. alnifolia**, L'Her. A low shrub; leaves oval, acute, serrate, nearly straight-veined; fruit 3-seeded.—Swamps, N.B. to Ont. and westward. June.

2. **CEANOTHUS**, L. NEW JERSEY TEA. RED-ROOT.

Calyx 5-lobed, incurved; the lower part cohering with the thick disk to the ovary, the upper separating across in fruit. Petals hooded, spreading, on slender claws longer than the calyx. Filaments elongated. Fruit 3-lobed, dry and splitting into its 3 carpels when ripe.—Shrubby plants; flowers in little umbel-like clusters, forming dense panicles or corymbs at the summit of naked flower-branches; calyx and pedicels colored like the petals. (An obscure name in Theophrastus, probably mis-spelled.)

1. **C. Americanus**, L. NEW JERSEY TEA. Leaves ovate or oblong-ovate, 3-ribbed, serrate, more or less pubescent, often slightly heart-shaped at base; common peduncles elongated.—Dry woodlands, Ont. July.—Stems 1-3° high from a dark red root; branches downy. Flowers in pretty white clusters, on leafy shoots of the same year. The leaves were used for tea during the American Revolution.

ORDER 21. VITACEÆ (VINE FAMILY).

Shrubs with watery juice, usually climbing by tendrils, with small regular flowers, a minute or truncated calyx, its limb mostly obsolete, and the stamens as many as the valvate petals and opposite them! Berry 2-celled, usually 4-seeded.—Petals 4-5, very deciduous, hypogynous or perigynous. Filaments slender; anthers introrse. Pistil with a short style or none, and a slightly 2-lobed stigma; ovary 2-celled, with 2 erect anatropous ovules from the base of each cell. Seeds bony, with a minute embryo at the base of the

hard albumen, which is grooved on one side.—Stipules deciduous. Leaves alternate, palmately veined or compound; tendrils and flower-clusters opposite the leaves. Flowers small, greenish, commonly polygamous. (Young shoots, foliage, etc., acid.)

* Ovary surrounded by a nectariferous or glanduliferous disk; plants climbing by the coiling of naked-tipped tendrils.

1. *Vitis*. Corolla caducous without expanding. Hypogynous glands 5, alternate with the stamens. Fruit pulpy. Leaves simple.

* * No distinct hypogynous disk; plants climbing by the adhesion of the dilated tips of the tendril-branches, or by naked-tipped tendrils.

2. *Ampelopsis*. Corolla expanding. Leaves digitate.

1. VITIS, Tourn. GRAPE.

Flowers polygamo-dicæous (some plants with perfect flowers, others staminate with at most a rudimentary ovary), 5-merous. Calyx very short, usually with a nearly entire border or none at all. Petals separating only at base and falling off without expanding. Hypogynous disk of 5 nectariferous glands alternate with the stamens. Berry pulpy. Seeds pyriform, with peak-like base.—Plants climbing by the coiling of naked-tipped tendrils. Flowers in a compound thyrses, very fragrant; pedicels mostly umbellate-clustered. Leaves simple, rounded and heart-shaped. (The classical Latin name.)

§ 1. *VITIS* proper. *Bark loose and shreddy; tendrils forked; nodes solid.*

† *Tendrils intermittent (none opposite each third leaf).*

‡ *Leaves glabrous and mostly shining, or short-hairy especially on the ribs beneath, incisely lobed or undivided.*

1. *V. cordifolia*, Michx. FROST OR CHICKEN GRAPE. Leaves 3-4' wide, not lobed or slightly 3-lobed, cordate with a deep acute sinus, acuminate, coarsely and sharply toothed, small; inflorescence ample, loose; berries small, black, very acerb, ripening after frosts; seeds 1 or 2, large, with a prominent raphé.—Thickets and stream banks. N.S., Q., Man., Neb., and southward. May, June.

2. *V. riparia*, Michx. Differing from the last in the larger and more persistent stipules (2-3" long), more shining and more usually 3-lobed leaves with a broad rounded or truncate sinus at

large acute or acuminate teeth, smaller compact inflorescence, and berries (4-5" broad) with a bloom, sweet and very juicy, ripening from July to Sept. ; seeds very small ; rhaphe indistinct. (*V. cordifolia*, var. *riparia*, Gray.)—Stream banks or near water. N.B., Ont., and westward. Eastward the berries are sour and ripen late.

2. AMPELOPSIS, Michx. VIRGINIAN CREEPER.

Calyx slightly 5-toothed. Petals concave, thick, expanding before they fall. Disk none.—Leaves digitate, with 5 (3-7) oblong-lanceolate sparingly serrate leaflets. Flower-clusters cymose. Tendrils fixing themselves to trunks or walls by dilated sucker-like disks at their tips or sometimes without disks. (Name from *ἀμπελον*, a vine, and *ὄψις*, appearance.)

1. *A. quinquefolia*, Michx. A common woody vine, in low or rich grounds, climbing extensively, sometimes by rootlets as well as by its disk-bearing tendrils, blossoming in July, ripening its small blackish berries in October. Also called *American Ivy*, and still less appropriately *Woodbine*. Leaves turning bright crimson in autumn. Q. to Man.

ORDER 22. SAPINDACEÆ (SOAPBERRY FAMILY).

Trees or shrubs, with simple or compound leaves, mostly unsymmetrical and often irregular flowers; the 4-5 sepals and petals imbricated in æstivation; the 5-10 stamens inserted on a fleshy (perigynous or hypogynous) disk; a 2-3-celled and -lobed ovary, with 1-2 (rarely more) ovules in each cell; and the embryo (except *Staphylea*) curved or convolute, without albumen.—A large and diverse order.

SUB-ORDER I. *Acerinæ* (MAPLE FAMILY). Flowers (polygamous or dioecious) small, regular, but usually unsymmetrical. Petals often wanting. Ovary 2-lobed and 2-celled, with a pair of ovules in each cell. Fruits winged, 1-seeded. Embryo coiled or folded; the cotyledons long and thin.—Leaves opposite, simple or compound.

1. *Acer*. Flowers polygamous. Leaves simple.

SUB-ORDER II. *Staphyleæ* (BLADDER-NUT FAMILY). Flowers (perfect) regular; stamens as many as the petals. Ovules 1-8 in each cell. Seeds bony, with a straight embryo in scanty albumen.

—Shrubs with opposite pinnately compound leaves, both stipulate and stipellate.

2. *Staphylea*. Lobes of the colored calyx and petals 5, erect. Stamens 5. Fruit a 3-celled bladdery-inflated pod.

1. **ACER**, Tourn. MAPLE.

Flowers polygamo-dioecious. Calyx colored, 5- (rarely 4-12) lobed or parted. Petals either none or as many as the lobes of the calyx, equal, with short claws if any, inserted on the margin of the lobed disk, which is either perigynous or hypogynous. Stamens 3-12. Ovary 2-celled, with a pair of ovules in each cell; styles 2, long and slender, united only below, stigmatic down the inside. From the back of each carpel grows a wing, converting the fruit into two 1-seeded, at length separable samaras or keys. Embryo variously coiled or folded, with large and thin cotyledons.—Trees, or sometimes shrubs, with opposite palmately-lobed leaves, and small flowers. Pedicels not jointed. (The classical name, from the Celtic *ac*, hard.)

* *Flowers in terminal racemes, greenish, appearing after the leaves; stamens 6-8.*

1. *A. Pennsylvanicum*, L. STRIPED MAPLE. Leaves 3-lobed at the apex, finely and sharply doubly serrate, the short lobes taper-pointed and also serrate; *racemes drooping, loose; petals obovate*; fruit with large diverging wings.—Rich woods, N.S., Q., and Ont. June.—A small and slender tree, with light-green bark striped with dark lines, and greenish flowers and fruit. Also called *Striped Dog-wood* and *Moose-wood*.

2. *A. spicatum*, Lam. MOUNTAIN M. Leaves downy beneath, 3- (or slightly 5) lobed, coarsely serrate, the lobes taper-pointed; *racemes upright, dense, somewhat compound; petals linear-spatulate*; fruit with small erect or divergent wings.—Moist woods, Newf. to Man. June.—A tall shrub, forming clumps.

** *Flowers in nearly sessile terminal and lateral umbellate-corymbs, greenish-yellow, appearing with the leaves.*

3. *A. saccharinum*, Wang. SUGAR or ROCK M. Leaves 3-5-lobed, with rounded sinuses and pointed sparingly sinuate-toothed lobes, either heart-shaped or nearly truncate at the base, whitish

and smooth or a little downy on the veins beneath ; flowers from terminal leaf-bearing and lateral leafless buds, drooping on very slender hairy pedicels ; calyx hairy at the apex ; petals none ; wings of the fruit broad, usually slightly diverging.—Rich woods, Newf. to Ont., and along the mountains southward. April, May.—A large and handsome tree.

Var. **nigrum**, Torr. and Gray. BLACK SUGAR-M. Leaves scarcely paler beneath, but often minutely downy, the lobes wider, often shorter and entire, the sinus at the base often closed.—With the ordinary form ; quite variable, sometimes appearing distinct.

*** *Flowers in umbel-like clusters arising from separate lateral buds, and much preceding the leaves ; stamens 3-6.*

4. **A. dasycarpum**, Ehrh. WHITE or SILVER M. Leaves very deeply 5-lobed with the sinuses rather acute, silvery-white (and when young downy) underneath, the divisions narrow, cut-lobed and toothed ; flowers (greenish-yellow) on short pedicels ; petals none ; fruit woolly when young, with large divergent wings.—River banks ; N.B., Q. and Ont. ; most common southward and westward. March-April.—A fine ornamental tree.

5. **A. rubrum**, L. RED or SWAMP M. Leaves 3-5 lobed, with acute sinuses, whitish underneath ; the lobes irregularly serrate and notched, acute, the middle one usually longest ; petals linear-oblong ; flowers (scarlet, crimson, or sometimes yellowish) on very short pedicels ; but the smooth fruit on prolonged drooping pedicels.—Swamps and wet woods, common. April.—A small tree, with reddish twigs ; the leaves varying greatly in shape, turning bright crimson in early autumn.

2. STAPHYLEA, L. BLADDER-NUT.

Calyx deeply 5-parted, the lobes erect, whitish. Petals 5, erect, spatulate, inserted on the margin of the thick perigynous disk which lines the base of the calyx. Stamens 5, alternate with the petals. Pistil of 3 several-ovuled carpels, united in the axis, their long styles lightly cohering. Pod large, membranaceous, inflated, 3-lobed, 3-celled, at length bursting at the summit ; the cells containing 1-4 bony anatropous seeds. Aril none. Embryo large and straight, in scanty albumen, cotyledons broad and thin.—Upright shrubs,

with opposite pinnate leaves of 3 or 5 serrate leaflets, and white flowers in drooping raceme-like clusters, terminating the branchlets. Stipules and stipels deciduous. (Name from *σταφύλη*, a cluster.)

1. **S. trifolia**, L. AMERICAN BLADDER-NUT. Leaflets 3, ovate, pointed.—Thickets, in moist soil. Montreal and Ont. May.—Shrub 10° high, with greenish striped branches.

ORDER 23. ANACARDIACEÆ (CASHEW FAMILY).

Trees or shrubs, with resinous or milky acrid juice, dotless alternate leaves, and small, often polygamous, regular, 5-merous flowers, but the ovary 1-celled and 1-ovuled, with 3 styles or stigmas.—Petals imbricated in the bud. Fruit mostly drupaceous. Seed without albumen, borne on a curved stalk that rises from the base of the cell. Stipules none. Juice or exhalations often poisonous.

1. RHUS, L. SUMACH.

Calyx small, 5-parted. Petals 5. Stamens 5, inserted under the edge or between the lobes of a flattened disk in the bottom of the calyx. Fruit small and indehiscent, a sort of dry drupe.—Leaves usually compound. Flowers greenish-white or yellowish. (The old Greek and Latin name.)

§ 1. RHUS proper. *Fruit symmetrical, with the styles terminal.*

* *Flowers polygamous, in a terminal thyrsoid panicle; fruit globular, clothed with acid crimson hairs; stone smooth; leaves odd-pinnate. (Not poisonous.)—(§ SUMAC, DC.)*

1. **R. typhina**, L. STAGHORN SUMACH. *Branches and stalks densely velvety hairy; leaflets 11-31, pale beneath, oblong-lanceolate, pointed, serrate, rarely laciniate.—Hillsides. June.—Shrub or tree 10-30° high, with orange-colored wood.*

** *Flowers polygamous, in loose and slender axillary panicles; fruit globular, glabrous, whitish or dun-colored; the stone striate; leaves odd-pinnate or 3-foliolate, thin. (Poisonous.)—(§ TOXICODENDRON, DC.)*

2. **R. Toxicodendron**, L. POISON IVY. POISON OAK. Climbing by rootlets over rocks, etc., or ascending trees, or sometimes low and erect; leaflets 3, rhombic-ovate, mostly pointed, and rather

downy beneath, variously notched, sinuate, or cut-lobed.—high-climbing plants (*R. radicans*, *L.*) having usually more entire leaves.—Thickets, low grounds. N. S., to N. W. T. June.

ORDER 24. **POLYGALACEÆ** (MILKWORT FAMILY).

Plants with irregular hypogynous flowers, 4–8 diadelphous or monadelphous stamens, their 1-celled anthers opening at the top by a pore or chink; the fruit a 2-celled and 2-seeded pod.

1. **POLYGALA**, Tourn. MILKWORT.

Flower very irregular. Calyx persistent, of 5 sepals, of which 3 (the upper and the 2 lower) are small and often greenish, while the two lateral or inner (called *wings*) are much larger, and colored like the petals. Petals 3, hypogynous, connected with each other and with the stamen-tube, the middle (lower) one keel-shaped and often crested on the back. Stamens 6 or 8; their filaments united below into a split sheath, or into 2 sets, cohering more or less with the petals, free above; anthers 1-celled, often cup-shaped, opening by a hole or broad chink at the apex. Ovary 2-celled, with a single anatropous ovule pendulous in each cell; style prolonged and curved; stigma various. Fruit a small, loculicidal 2-seeded pod, usually rounded and notched at the apex, much flattened contrary to the very narrow partition. Seeds carunculate. Embryo large, straight, with flat and broad cotyledons, in scanty albumen.—Bitter plants (low herbs in temperate regions), with simple entire often dotted leaves, and no stipules; sometimes (as in the first two species) bearing cleistogamous flowers next the ground. (An old name composed of *πολύς*, *much*, and *γάλα*, *milk*, from a fancied property of its increasing this secretion.)

* *Perennial or biennial; flowers purple or white; leaves alternate.*

† *Flowers showy, rose-purple, conspicuously crested; also bearing inconspicuous colorless cleistogamous flowers on subterranean branches.*

1. **P. paucifolia**, Willd. *Perennial; flowering stems short (3–4' high), from long, slender prostrate or subterranean shoots, which also bear concealed fertile flowers; lower leaves small and scale-like, scattered, the upper ovate, petioled, crowded at the summit;*

flowers 1-3, large, peduncled; wings obovate, rather shorter than the fringe-crested keel; stamens 6; caruncle of 2 or 3 awl-shaped lobes longer than the seed.—Woods, in light soil, N. B. to Ont., and southward along the Alleghanies. May.—A delicate plant, with very handsome flowers, 9' long, rose-purple, or rarely pure white. Sometimes called *Flowering Wintergreen*, but more appropriately **FRINGED POLYGALA**.

2. **P. polygama**, Walt. Stems numerous from the biennial root, mostly simple, ascending, very leafy (6-9' high); leaves oblanceolate or oblong; terminal raceme loosely many-flowered, the broadly obovate wings longer than the keel; stamens 8; radical flowers racemed on short subterranean runners; lobes of the caruncle 2, scale-like, shorter than the seed.—Dry sandy soil; N. S. to Ont., common. July.

†† Flowers white, in a solitary close spike; none cleistogamous.

3. **P. Senega**, L. **SENECA SNAKEROOT**. Stems several from thick and hard knotty rootstocks, simple (6-12' high); leaves lanceolate or oblong-lanceolate, with rough margins; wings round-obovate, concave; crest short; caruncle nearly as long as the seed.—Rocky soil, N. B. to R. Mts. May, June.

C. CALYCIFLORÆ. Sepals rarely distinct; disk adnate to the base of the calyx, rarely tumid or conspicuous; petals and stamens on the calyx, perigynous or epigynous, the ovary being often inferior (hypogynous in *Drosera* and *Parnassia*, nearly so in some Leguminosæ and Crassulacæ). Apetalous flowers in Orders 27, 28, 29, 31, 32, and 36.

ORDER 25. LEGUMINOSÆ (PULSE FAMILY).

Plants with papilionaceous or sometimes regular flowers, 10 (rarely 5 and sometimes many) monadelphous, diadelphous, or rarely distinct stamens, and a single simple free pistil, becoming a legume in fruit. Seeds mostly without albumen. Leaves alternate, with stipules, usually compound. One of the sepals inferior (i.e., next the bract); one of the petals superior (i.e., next the axis of the inflorescence).—A very large order (nearly free from noxious qualities), of which the principal representatives in northern temperate regions belong to the first of the three sub-orders it comprises.

SUB-ORDER. I. Papilionaceæ. Calyx of 5 sepals, more or less united, often unequally so. Corolla inserted into the base of the calyx, of 5 irregular petals (or very rarely fewer), more or less distinctly *papilionaceous*, i.e., with the upper or odd petal (*rexillum* or *standard*) larger than the others and enclosing them in the bud, usually turned backward or spreading; the two lateral ones (*wings*) oblique and exterior to the two lower, which last are connivent and commonly more or less coherent by their anterior edges, forming the *carina* or *keel*, which usually encloses the stamens and pistil. Stamens 10, very rarely 5, inserted with the corolla, monadelphous, diadelphous (mostly with 9 united into a tube which is cleft on the upper side, and the tenth or upper one separate), or occasionally distinct. Ovary 1-celled, sometimes 2-celled by an intrusion of one of the sutures, or transversely 2-many-celled by cross-division into joints; style simple; ovules amphitropous, rarely anatropous. Cotyledons large, thick or thickish; radicle incurved.—Leaves simple or simply compound, the earliest ones in germination usually opposite, the rest alternate; leaflets almost always quite entire. Flowers perfect, solitary and axillary, or in spikes, racemes, or panicles.

I. Stamens monadelphous, or diadelphous (9 and 1, rarely 5 and 5).

* Anthers uniform.

† Leaves digitately (rarely pinnately) 3-foliolate; leaflets denticulate or serrulate; stamens diadelphous; pods small, 1-few seeded, often enclosed in the calyx or curved or coiled. (TRIFOLIÆ.)

1. **Trifolium.** Flowers capitate. Pods membranaceous, 1-6-seeded. Petals adherent to the stamen-tube.

2. **Mellilotus.** Flowers racemed. Pod coriaceous, wrinkled, 1-2-seeded.

3. **Medicago.** Flowers racemed or spiked. Pods curved or coiled, 1-few-seeded.

†† Leaves unequally pinnate; pod not jointed; not twining nor climbing.

‡ Flowers in spikes, racemes, or heads. (GALEGEÆ.)

Herbage not glandular-dotted; stamens mostly diadelphous; pod 2-valved, several-seeded; leaves pinnately several-foliolate; flowers racemose.

a. Flowers large and showy; standard broad; wings free; woody; leaflets stipellate.

4. **Robinia.** Pod flat, thin, margined on one edge. Trees or shrubs.

b. Standard narrow, erect; pod turgid or inflated; perennial herbs.

5. **Astragalus.** Keel not tipped with a point or sharp appendage. Pod with one or both the sutures turned in, sometimes dividing the cell lengthwise into two.

6. **Oxytropis.** Keel tipped with an erect point; otherwise as *Astragalus*.

††† Herbs with pinnate or pinnately 1-3-foliate leaves; no tendrils; pod transversely 2-several-jointed, the reticulated 1-seeded joints indehiscent, or sometimes reduced to 1 such joint. (HEDYSARÆÆ.)

|| Leaves pinnate, with several leaflets, not stipellate.

7. **Hedysarum.** Stamens unequally diadelphous (9 and 1). Calyx 5-cleft. Pod several-jointed; joints roundish.

|| Leaves pinnately 3-foliate, rarely 1-foliate.

8. **Desmodium.** Stamens diadelphous (9 and 1) or monadelphous below. Calyx 2-lipped. Pod several-jointed. Flowers all of one sort and complete. Leaflets stipellate.

†††† Herbs with abruptly pinnate leaves, terminated by a tendril or bristle; stamens diadelphous; pod continuous, 2-valved, few-several-seeded. (VICIÆÆ.)

9. **Vicia.** Wings adherent to the keel. Style filiform, bearded with a tuft or ring of hairs at the apex.

10. **Lathyrus.** Wings nearly free. Style somewhat dilated and flattened upwards, bearded down the inner face.

†††† Twining (sometimes only trailing) herbs; leaves pinnately 3- (rarely 1 or 5-7) foliate; no tendrils; peduncles or flowers axillary; pod not jointed, 2-valved. (PHASEOLÆÆ.)

|| Leaves pinnate.

11. **Aplos.** Herbaceous twiner; leaflets 5-7. Keel slender and much incurved or coiled.

|| Leaves 3-foliate. Ovules and seeds several. Flowers not yellow.

12. **Amphicarpæa.** Calyx tubular, 4-5-toothed. Standard erect; keel almost straight. Style beardless. Some nearly apetalous fertile flowers next the ground.

1. TRIFOLIUM, Tourn. CLOVER. TREFOIL.

Calyx persistent, 5-cleft, the teeth bristle-form. Corolla mostly withering or persistent; the claws of all the petals, or of all except the oblong or ovate standard, more or less united below with the stamen-tube; keel short and obtuse. Tenth stamen more or less separate. Pods small and membranous, often included in the calyx, 1-6-seeded, indehiscent, or opening by one of the sutures.—Tufted or diffuse herbs. Leaves mostly palmately, sometimes pinnately 3-foliate; leaflets usually toothed. Stipules united with the petiole. Flowers in heads or spikes. (Name from *tres*, three, and *folium*, a leaf.)

* Flowers sessile in dense heads; corolla purple or purplish, withering away after flowering, tubular below, the petals more or less coherent with each other.

† Calyx-teeth silky-plumose, longer than the whitish corolla; root annual.

1. **T. arvense**, L. RABBIT-FOOT or STONE CLOVER. Silky, branching (5-10' high); leaflets oblanceolate; heads becoming very soft-silky and grayish, oblong or cylindrical.—Old fields, N. B. to Ont. (Nat. from Eu.)

†† *Calyx scarcely hairy except a bearded ring in the throat, shorter than the rose-purple elongated-tubular corolla. (Short-lived perennials; flowers sweet-scented.)*

2. **T. pratense**, L. RED C. Stems ascending, somewhat hairy; leaflets oval or obovate, often notched at the end and marked on the upper side with a pale spot; stipules broad, bristle-pointed; heads ovate, sessile.—Fields and meadows; largely cultivated. (Adv. from Eu.)

*** *Flowers pedicelled in umbel-like round heads on a naked penduncle, their short pedicels reflexed when old; corolla white or rose color, withering persistent and turning brownish in fading; the tubular portion short.*

3. **T. repens**, L. WHITE C. Smooth, perennial; the slender stems spreading and creeping; leaflets inversely heart-shaped or merely notched, obscurely toothed; stipules scale-like, narrow; petioles and especially the penducles very long; heads small and loose; calyx much shorter than the white corolla; pods about 4-seeded.—Fields and copses, everywhere. Indigenous only in the northern part of our range, if at all.

*** *Flowers short-pedicelled in close heads, reflexed when old; corolla yellow, persistent, turning dry and chestnut-brown with age, the standard becoming hood-shaped; annuals, fl. in summer.*

4. **T. agrarium**, L. YELLOW or HOP-C. Smoothish, somewhat upright (6-12' high); leaflets abovate-oblong, all three from the same point (palmate) and nearly sessile; stipules narrow, cohering with the petiole for more than half its length.—Sandy fields and roadsides; N. Scotia to Ont. (Nat. from Eu.)

5. **T. procumbens**, L. Low HOP-C. Stems spreading or ascending, pubescent (3-6' high); leaflets wedge-obovate, notched at the end, the lateral at a small distance from the other (pinnately 3-foliate); stipules ovate, short.—Sandy fields and roadsides, common.—Var. **MINUS**, Gray, has smaller heads, the standard not much striate with age. (Nat. from Eu.)

2. MELILOTUS, Tourn. MELILOT. SWEET CLOVER.

Flowers much as in *Trifolium*, but in spike-like racemes, small; corolla deciduous, free from the stamen-tube. Pod ovoid, coriaceous, wrinkled, longer than the calyx, scarcely dehiscent, 1-2-seeded.—Annual or biennial herbs, fragrant in drying, with pinnately 3-foliolate leaves, leaflets toothed. (Name from μέλι, *honey*, and λωτός, some leguminous plant.)

1. *M. officinalis*, Willd. YELLOW MELILOT. Upright (2-4° high); leaflets obovate-oblong, obtuse; corolla yellow; the petals nearly of equal length.—Waste or cultivated grounds. (Adv. from Eu.)

2. *M. alba*, Lam. WHITE M. Leaflets truncate; corolla white; the standard longer than the other petals.—In similar places. (Adv. from Eu.)

3. MEDICAGO, Tourn. MEDICK.

Flowers nearly as in *Melilotus*. Pod 1-several-seeded, scythe-shaped, incurved, or variously coiled.—Leaves pinnately 3-foliolate; leaflets toothed; stipules often cut. (Μηδική, the name of Lucerne, because it came to the Greeks from Media.)

1. *M. lupulina*, L. BLACK MEDICK. NONESUCH. Procumbent, pubescent, annual; leaflets wedge-obovate, toothed at the apex; flowers in short spikes (yellow); pods kidney-form, 1-seeded.—Waste places, Q. and Ont., west to Mich., Iowa, and Mo. (Adv. from Eu.)

4. ROBÍNIA, L. LOCUST-TREE.

Calyx short, 5-toothed, slightly 2-lipped. Standard large and rounded, turned back, scarcely longer than the wings and keel. Stamens diadelphous. Pod linear, flat, several-seeded, margined on the seed-bearing edge, at length 2-valved.—Trees or shrubs, often with prickly spines for stipules. Leaves odd-pinnate, the ovate or oblong leaflets stipellate. Flowers showy, in hanging axillary racemes. Base of the leaf-stalks covering the buds of the next year. (Named in honor of *John Robin*, herbalist to Henry IV. of France, and his son *Vespasian Robin*, who first cultivated the Locust-tree in Europe.)

1. **R. Pseudacacia**, L. COMMON LOCUST or FALSE ACACIA. Branches naked; *racemes slender, loose*; flowers white, fragrant; pod smooth.—S. Penn. to Ind., Iowa, and southward. Commonly cultivated as an ornamental tree, and for its valuable timber; naturalized in many places. N.S. to Ont. June.

5. ASTRAGALUS, Tourn. MILK-VETCH.

Calyx 5-toothed. Corolla usually long and narrow; standard narrow, equalling or exceeding the wings and blunt keel, its sides reflexed or spreading. Stamens diadelphous. Pod several-many-seeded, various, mostly turgid, one or both sutures usually projecting into the cell, either slightly or so as to divide the cavity lengthwise into two.—Chiefly herbs (ours perennials), with odd-pinnate leaves and spiked or racemed flowers. Mature pods are usually necessary for certain identification of the species. (The ancient Greek name of a leguminous plant, as also of the ankle-bone; but the connection between the two is past all guess.)

I. *Pod turgid, completely or imperfectly 2-celled by the intrusion of the dorsal suture, the ventral suture being not at all or less deeply inflexed.*—ASTRAGALUS proper.

* *Pod dry, coriaceous, cartilaginous or membranous, dehiscent.*

† *Pod completely 2-celled, sessile.*

1. **A. Canadensis**, L. Tall and erect (1-4' high), somewhat pubescent or glabrate; leaflets 21-27, oblong; flowers greenish cream color, very numerous, in long dense spikes; pods crowded, oblong (6" long), glabrous, *terete, scarcely sulcate* and only on the back, nearly straight.—River banks, P.Q., and far westward.

†† *Pod not completely 2-celled.*

2. **A. alpinus**, L. Diffuse (6-12' high), smooth or slightly hairy; leaflets 13-25; flowers violet-purple, or at least the keel tipped with violet or blue; calyx campanulate; pod narrowly oblong, short-acuminate, *black-pubescent*, triangular-turgid, deeply grooved on the back, straight or curved, its stipe usually rather exceeding the calyx.—Rocky banks, Lab., north and westward.

6. OXYTROPIS, DC

Keel tipped with a sharp projecting point or appendage; otherwise as in Astragalus. Pod often more or less 2-celled by the

intrusion of the ventral suture.—Our species are low, nearly acaulescent perennials, with tufts of numerous very short stems from a hard and thick root or rootstock, covered with scaly adnate stipules; pinnate leaves of many leaflets; peduncles scapelike, bearing a head or short spike of flowers. (Name from ὀξύς, *sharp*, and κέλις, *keel*.)

* *Leaves simply pinnate.*

1. *O. campestris*, DC., var. *cærulea*, Koch. *Pubescent or smoothish*; leaflets lanceolate or oblong; flowers violet or blue, sometimes pure white; *Pods* ovate or oblong lanceolate, of a *thin or papery* texture.—Lab. and N. B., westward.

7. HEDYSARUM, Tourn.

Calyx 5-cleft, the lobes awl-shaped and nearly equal. Keel nearly straight, obliquely truncate, not appendaged, longer than the wings. Stamens diadelphous, 9 and 1. Pod flattened, composed of several equal-sided separable roundish joints connected in the middle.—Perennial herbs; leaves odd-pinnate. (Name composed of ἡδύς, *sweet*, and ἄρωμα, *smell*.)

1. *H. boreale*, Nutt. Leaflets 13–21, oblong or lanceolate, nearly glabrous; stipules scaly, united opposite the petiole; raceme of many deflexed purple flowers; standard shorter than the keel; joints of the pod 3 or 4, smooth, reticulated.—Lab. to northern Maine and Vt.; north shore of L. Superior, and north and westward.

8. DESMODIUM, Desv. TICK-TREFOIL.

Calyx usually more or less 2-lipped. Standard obovate; wings adherent to the straight or straightish and usually truncate keel, by means of a little transverse appendage on each side of the latter. Stamens diadelphous, 9 and 1, or monadelphous below. Pod flat, deeply lobed on the lower margin, separating into few or many flat reticulated joints (mostly roughened with minute hooked hairs, by which they adhere to the fleece of animals or to clothing).—Perennial herbs, with pinnately 3-foliolate (rarely 1-foliolate) leaves, stipellate. Flowers (in summer) in axillary or terminal racemes, often paniced, and 2 or 3 from each bract, purple or purplish, often turning green in withering. Stipules and bracts

scale-like, often striate. (Name from *δεσμός*, a bond or chain, from the connected joints of the pods.)

§ 1. *Pod raised on a stalk (stipe) many times longer than the slightly toothed calyx and nearly as long as the pedicel, straightish on the upper margin, deeply sinuate on the lower; the 1-4 joints mostly half-obovate and concave on the back; stamens monadelphous below; plants nearly glabrous; stems erect or ascending; raceme terminal, paniced; stipules bristle-form, deciduous.*

1. **D. nudiflorum**, DC. *Leaves all crowded at the summit of sterile stems; leaflets broadly ovate, bluntish, whitish beneath; raceme elongated on an ascending mostly leafless stalk or scape from the root, 2° long.—Dry woods, common, P. Q. to Ont.*

2. **D. acuminatum**, DC. *Leaves all crowded at the summit of the stem, from which arises the elongated naked raceme or panicle; leaflets round-ovate, taper-pointed, green both sides, the end one round (4-5' long).—Rich woods, from Canada to the Gulf.*

§ 2. *Pod slightly if at all stalked in the calyx; racemes paniced.*

* *Stipules small and inconspicuous, mostly deciduous; pods of few roundish or obliquely oval or sometimes roundish-rhomboidal joints, $1\frac{1}{2}$ -2 $\frac{1}{2}$ " long.*

† *Stems erect; bracts before flowering conspicuous; racemes densely flowered.*

3. **D. Canadense**, DC. *Stem hairy (3-6° high); leaflets oblong-lanceolate or ovate-lanceolate, obtuse, with numerous straightish veins, much longer than the petiole ($1\frac{1}{2}$ -3' long); flowers showy, larger than in any other species ($\frac{1}{2}$ - $\frac{3}{4}$ ' long).—Dry rich woods, N.B. westward to Minn. and Kan.*

9. VICIA, Tourn. VETCH. TARE.

Calyx 5-cleft or 5-toothed, the 2 upper teeth often shorter, or the lowest longer. Wings of the corolla adhering to the middle of the keel. Stamens more or less diadelphous (9 and 1); the orifice of the tube oblique. Style filiform, hairy all round or only on the back at the apex. Pod flat, 2-valved, 2-several-seeded. Seeds globular. Cotyledons very thick, remaining under ground in germination.—Herbs, mostly climbing more or less by the tendrils

at the end of the pinnate leaves. Stipules half-sagittate. Flowers or peduncles axillary. (The classical Latin name.)

* *Annual; flowers 1 or 2 in the axils, nearly sessile, large, violet-purple.*

1. **V. sativa**, L. COMMON VETCH, or TARE. Somewhat pubescent; stem simple; leaflets 5-7 pairs, varying from obovate-oblong to linear, notched and mucronate at the apex; pod linear, several-seeded.—Cultivated fields and waste places. (Adv. from Eu.)

* * *Annual, slender; peduncles elongated; flowers small.*

2. **V. tetrasperma**, L. *Peduncles 1-2-flowered; leaflets 4-6 pairs, linear-oblong, obtuse; calyx-teeth unequal; corolla whitish; pods narrow, 4-seeded, smooth.*—Waste places, N.S., P.Q. and Ont. (Nat. from Eu.)

* * * *Perennial; peduncles elongated; calyx-teeth unequal; pod several-seeded.*

3. **V. Cracca**, L. Downy-pubescent; *leaflets 20-24, oblong-lanceolate, strongly mucronate; spikes densely many-flowered, 1-sided; flowers blue, turning purple, 6" long, reflexed; calyx-teeth shorter than the tube.*—Borders of thickets, Newf. to Ont., Ky., Iowa, and Minn. (Eu.)

10. LATHYRUS, Tourn. VETCHLING. EVERLASTING PEA.

Style flattish, dilated and flattish (not grooved) above, hairy along the inner side (next the free stamen). Sheath of the filaments scarcely oblique at the apex. Otherwise nearly as in Vicia. —Our species are perennial and mostly smooth plants, the rhachis of the leaves in some not produced into a tendril. (*Λάθρος*, a leguminous plant of Theophrastus.)

* *Tendrils present; stipules large and broad; leaflets 3-5 pairs.*

1. **L. maritimus**, Bigelow. BEACH PEA. Stout (1° high or more); *stipules broadly ovate and halberd-shaped, nearly as large as the leaflets, the lower lobe larger and usually coarsely toothed; leaflets thick, ovate-oblong (1-2' long); peduncles a little shorter than the leaves, 6-10-flowered, flowers large (9" long), purple.*—Seashore from Lab. and B.C. to the Arctic Sea; also on the Great Lakes. (Eu.)

2. **L. ochroleucus**, Hook. Stem slender (1-3° high); *stipules semi-cordate, half as large as the thin ovate leaflets*; peduncles 7-10-flowered; *flowers smaller, yellowish-white*.—P.Q. north and westward.

** *Tendrils present*; *stipules narrow, semi-sagittate, acuminate*.

† *Flowers purple*; *leaflets several pairs*.

3. **L. palustris**, L. *Slender, glabrous or somewhat pubescent*; stem often winged; *stipules lanceolate, sharp-pointed at both ends*; *leaflets 2-4 pairs, narrowly oblong to linear, acute (1-2' long)*; *peduncles 2-6-flowered*; *flowers 6" long*.—Moist places, Lab. and N. Scotia, westward across the continent. (Eu.)

11. APIOS, Boerhaave. GROUND-NUT. WILD BEAN.

Calyx somewhat 2-lipped, the 2 lateral teeth being nearly obsolete, the upper very short, the lower one longest. Standard very broad, reflexed; the long scythe-shaped keel strongly incurved, at length coiled. Stamens diadelphous. Pod straight or slightly curved, linear, elongated, thickish, many-seeded.—A perennial herb (with some milky juice!), twining and climbing over bushes, and bearing edible tubers on underground shoots. Leaflets 3-7, ovate-lanceolate, obscurely stipellate. Flowers in dense and short, often branching racemes. (Name from *ἄπιον*, a *pear*, from the shape of the tubers.)

1. **A. tuberosa**, Moench. Flowers brown-purple or chocolate color, violet-scented.—Low grounds, N. Brunswick to Ont., west to Minn., Kan., and La.

12. AMPHICARPEA, Ell. HOG PEA-NUT.

Flowers of 2 kinds; those of the racemes from the upper branches perfect, but seldom ripening fruit; those near the base and on filiform creeping branches with the corolla none or rudimentary, and few free stamens, but fruitful. Calyx about equally 4- (rarely 5) toothed; bractlets none or minute. Keel and wing-petals similar, almost straight; the standard partly folded round them. Stamens diadelphous. Style beardless. Pods of the upper flowers, when formed, somewhat scymetar-shaped, stipitate, 3-4-seeded; of the lower ones commonly subterranean and fleshy, obovate or pear-shaped, ripening usually but one large seed.—Low and slender

perennials; the twining stems clothed with brownish hairs. Leaves pinnately 3-foliolate; leaflets rhombic-ovate, stipellate. Flowers in simple or compound racemes, purplish. Bracts persistent, round, partly clasping, striate, as well as the stipules. (Name from *ἀμφί*, both, and *καρπός*, fruit, in allusion to the two kinds of pods.)

1. *A. monolca*, Nutt. Leaflets thin, $\frac{1}{2}$ –2' long; racemes nodding; calyx of upper flowers 2" long, the ovary glabrous except the hairy margin; pod 1' long; ovary and pod of the rudimentary flowers hairy.—Rich damp woodlands, common. Aug., Sept.

ORDER 26. ROSACEÆ (ROSE FAMILY).

Plants with regular flowers, numerous (rarely few) distinct stamens inserted on the calyx, and 1–many pistils, which are quite distinct, or (in the last tribe) united and combined with the calyx-tube. Seeds (anatropous) 1–few in each ovary, almost always without albumen. Embryo straight, with large and thick cotyledons. Leaves alternate, with stipules, these sometimes caducous, rarely obsolete or wanting. —Calyx of 5 or rarely 3–4–8 sepals (the odd one superior), united at the base, often appearing double by a row of bractlets outside. Petals as many as the sepals (rarely wanting), mostly imbricated in the bud, and inserted with the stamens on the edge of a disk that lines the calyx-tube. Trees, shrubs, or herbs.—A large and important order, almost destitute of noxious qualities, and producing the most valuable fruits. Very intimately connected with Leguminosæ on one hand, and with Saxifragaceæ on the other.

1. Ovary superior and not enclosed in the calyx-tube at maturity.

* Calyx deciduous, without bractlets; pistil solitary, becoming a drupe.

Tribe I. PRUNÆ. Trees or shrubs, with simple mostly serrate leaves. Ovules 2, pendulous, but seed almost always solitary. Style terminal.

1. *Prunus*. Flowers perfect. Lobes of calyx and corolla 5. Stone of the drupe bony.

** Calyx mostly persistent; pistils few to many (rarely solitary).

† Calyx without bractlets; ovules 2–many.

Tribe II. SPIRÆÆ. Pistils mostly 5, becoming 2–several-seeded follicles. Shrubs or perennial herbs.

a. Calyx short, 5 cleft. Petals obovate, equal.

2. *Spiræa*. Flowers perfect or dimorphic. Pods 1-valved. Herbs or shrubs; leaves simple or pinnate.

3. *Physocarpus*. Pods inflated, 2-valved. Shrub; leaves palmately lobed.

b. Calyx elongated, 5-toothed. Petals slender, unequal.

Tribe III. RUBEÆ. Pistils several or numerous, becoming drupelets in fruit. Ovules 2 and pendulous, but seed solitary. Perennials, herbaceous or with biennial soft-woody stems.

4. **Rubus.** Pistils numerous, fleshy in fruit, crowded upon a spongy receptacle.
5. **Dalibarda.** Pistils 5-10, in the bottom of the calyx, nearly dry in fruit.

†† Calyx-lobes mostly with bractlets; ovule solitary.

Tribe IV. POTENTILLEÆ. Pistils few-many, 1-ovuled, becoming dry achenes. Herbs.

- a. Styles persistent and elongated after anthesis, often plumose or jointed.
6. **Geum.** Calyx-lobes usually with 5 alternating small bractlets. Stamens and carpels numerous; styles becoming plumose or hairy tails, or naked and straight or jointed.
- b. Styles not elongated after anthesis, mostly deciduous.
7. **Fragaria.** Flower as in *Potentilla*. Receptacle much enlarged and pulpy in fruit.
8. **Potentilla.** Petals 5 (rarely 4), conspicuous. Calyx-lobes as many, with an alternating set of bractlets. Stamens and achenes numerous; the latter heaped on a dry receptacle. Styles commonly more or less lateral, deciduous or not enlarging in fruit.

II. Ovaries inferior or enclosed in the calyx-tube.

Tribe V. POTERIEÆ. Pistils 1-4, becoming achenes, completely enclosed in the dry and firm calyx-tube, which is constricted or nearly closed at the throat. Herbs with compound or lobed leaves. Petals often none.

9. **Agrimonia.** Calyx turbinate, with a margin of hooked prickles. Stamens 5-12. Flowers yellow, in long racemes.
10. **Poterium.** Calyx-lobes petaloid; tube 4-angled, naked. Petals none. Flowers densely capitate or spicate.

Tribe VI. ROSEÆ. Pistils many, becoming bony achenes, enclosed in the globose or urn-shaped fleshy calyx-tube, which resembles a pome. Petals conspicuous. Stamens numerous.

11. **Rosa.** The only genus. Prickly shrubs with pinnate leaves.

Tribe VII. POMEÆ. Carpels 2-5, enclosed in and coalescent with the fleshy or berry-like calyx, in fruit becoming a 2-several-celled pome. Trees or shrubs, with stipules free from the petiole.

- a. Cells of the compound ovary as many as the styles (2-5), each 2- (rarely several) ovuled.
12. **Pyrus.** Pome containing 2-5 papery or cartilaginous carpels.
13. **Crataegus.** Pome drupe-like, with 1-5 bony stones or kernels. Usually thorny.
- b. Cells of the compound ovary becoming twice as many as the styles, each 1-ovuled.
14. **Amelanchier.** Pome usually of 5 carpels; each becomes incompletely 2-celled by a projection from its back; otherwise as *Pyrus*.

1. PRUNUS, Tourn. PLUM, CHERRY, ETC.

Calyx 5-cleft; the tube bell-shaped, urn-shaped or tubular-obconical, deciduous after flowering. **Petals** 5, spreading. **Stamens** 15-20. **Pistil** solitary, with 2 pendulous ovules. **Drupe** fleshy, with a bony stone.—Small trees or shrubs, with mostly edible fruit. (The ancient Latin name.)

§ 1. **PRUNUS** proper (and **CERASUS**). *Drupe smooth, and the stone smooth or somewhat rugged; flowers (usually white) from separate lateral scaly buds in early spring, preceding or coetaneous with the leaves; the pedicels few or several in simple umbel-like clusters.*

1. **P. Americana**, Marshall. **WILD YELLOW OR RED PLUM.** Tree thorny, 8-20° high; *leaves ovate or somewhat obovate, conspicuously pointed, coarsely or doubly serrate, very veiny, glabrous when mature; fruit nearly destitute of bloom, roundish-oval, yellow, orange, or red, $\frac{1}{2}$ - $\frac{3}{4}$ " in diameter, with the turgid stone more or less acute on both margins, or in cultivated states 1" or more in diameter, the flattened stone with broader margins; pleasant-tasted, but with a tough and acerb skin.*—Woodlands and river banks, common.

2. **P. Pennsylvanica**, L. f. **WILD RED CHERRY.** Tree 20-30° high, with light red-brown bark; *leaves oblong lanceolate, pointed, finely and sharply serrate, shining, green and smooth both sides; flowers many in a cluster, on long pedicels; fruit globose, light red, very small, with thin and sour flesh; stone globular.*—Rocky woods, Newf., and westward.

§ 2. **PADUS.** *Drupe small, globose, without bloom; the stone turgid-ovate, marginless; flowers in racemes terminating leafy branches, therefore appearing after the leaves, late in spring.*

3. **P. Virginiana**, L. **CHOKE-CHERRY.** A tall shrub, with grayish bark; *leaves oval, oblong, or obovate, abruptly pointed, very sharply (often doubly) serrate with slender teeth, thin; petals roundish; fruit red, turning to dark crimson; stone smooth.*—River banks, Newf., westward.—Fruit very austere and astringent. A variety with very short dense racemes and sweeter yellowish fruit has been found at Dedham, Mass.

4. *P. serotina*, Ehrh. WILD BLACK CHERRY. A large tree, with reddish-brown branches; leaves oblong or lanceolate-oblong, taper-pointed, serrate with incurved short and callous teeth, thickish, shining above; racemes elongated; petals obovate; fruit purplish-black.—Woods, N. S. to Ont., west to Minn., E. Neb., and La.—Fruit slightly bitter, but with a pleasant vinous flavor.

2. SPIRÆA, L. MEADOW-SWEET.

Calyx 5-cleft, short, persistent. Petals 5, obovate, equal, imbricated in the bud. Stamens 10–50. Pods (follicles) 5–8, not inflated, few-several-seeded. Seeds linear, with a thin or loose coat and no albumen.—Shrubs or perennial herbs, with simple or pinnate leaves, and white or rose-colored flowers in corymbs or panicles. (The Greek name from *σπειράω*, to twist, from the twisting of the pods in the original species.)

§ 1. SPIRÆA proper. Erect shrubs, with simple leaves; stipules obsolete; pods mostly 5, several-seeded.

1. *S. salicifolia*, L. COMMON MEADOW-SWEET. Nearly smooth (2–3° high); leaves wedge-lanceolate, simply or doubly-serrate; flowers in a crowded panicle, white or flesh color; pods smooth.—Wet or low grounds, Newf., westward.

2. *S. tomentosa*, L. HARDHACK. STEEPLE-BUSH. Stems and lower surface of the ovate or oblong serrate leaves very woolly; flowers in short racemes crowded in a dense panicle, rose color, rarely white; pods woolly.—Low grounds, N. Scotia to Ont.

3. PHYSOCARPUS, Maxim. NINE-BARK.

Carpels 1–5, inflated, 2-valved; ovules 2–4. Seeds roundish, with a smooth and shining crustaceous testa and copious albumen. Stamens 30–40. Otherwise as Spiræa.—Shrubs, with simple palmately-lobed leaves and umbel-like corymbs of white flowers. (Name from *φύσα*, a bladder, and *καρπός*, fruit.)

1. *P. opulifolius*, Maxim. Shrub 4–10° high, with long recurved branches, the old bark loose and separating in numerous thin layers; leaves roundish, somewhat 3-lobed and heart-shaped; the purplish membranaceous pods very conspicuous. (*Spiræa opulifolia*, L. *Neillia opulifolia*, Benth. and Hook.)—Rocky banks of

streams, P. Q., Ont., and west to the Pacific northward. Often cultivated.

4. RUBUS, TOURN. BRAMBLE.

Calyx 5-parted, without bractlets. Petals 5, deciduous. Stamens numerous. Achenes usually many, collected on a spongy or succulent receptacle, becoming small drupes; styles nearly terminal. —Perennial herbs, or somewhat shrubby plants, with white (rarely reddish) flowers, and edible fruit. (The Roman name, kindred with *ruber*, red.)

§ 1. *Fruit, or collective mass of drupes, falling off whole from the dry receptacle when ripe, or of few grains which fall separately.*—RASPBERRY.

* *Leaves simple; flowers large; prickles none; fruit and receptacle flat and broad.*

1. *R. odoratus*, L. PURPLE FLOWERING-RASPBERRY. *Stem shrubby (3-5° high); branches, stalks, and calyx bristly with glandular clammy hairs; leaves 3-5 lobed, the lobes pointed and minutely toothed, the middle one prolonged; peduncles many-flowered; flowers showy (2' broad); calyx-lobes tipped with a long narrow appendage; petals rounded, purple rose color; fruit reddish.*—N. S. to Ont., west to Mich.

** *Leaflets (pinnately or pedately) 3-5; petals small, erect, white.*
† *Stems annual, herbaceous, not prickly; fruit of few separate grains.*

2. *R. triflorus*, Richardson. DWARF RASPBERRY. *Stems ascending (6-12' high) or trailing; leaflets 3 (or pedately 5), rhombic-ovate or ovate-lanceolate, acute at both ends, coarsely doubly serrate, thin, smooth; peduncle 1-3-flowered.*—Wooded hillsides, Lab. to the Pacific. Sepals and petals often 6 or 7. This appears to be more properly a blackberry.

†† *Stems biennial and woody, prickly; receptacle oblong; fruit hemispherical.*

3. *R. strigosus*, Michx. WILD RED RASPBERRY. *Stems upright, and with the stalks, etc., beset with stiff straight bristles (or a few becoming weak hooked prickles), glandular when young, somewhat glaucous; leaflets 3-5, oblong-ovate, pointed, cut-serrate,*

whitish-downy underneath, the lateral ones sessile; petals as long as the sepals; fruit light red.—Thickets and hills. Lab. to the R. Mts.

4. **R. occidentalis**, L. BLACK RASPBERRY. THIMBLEBERRY. *Glaucous all over; stems recurved, armed like the stalks, etc., with hooked prickles, not bristly; leaflets 3 (rarely 5), ovate, pointed, coarsely doubly serrate, whitened-downy underneath, the lateral ones somewhat stalked; petals shorter than the sepals; fruit purple-black (rarely a whitish variety), ripe early in July. Common, N.B. to Ont.—An apparent hybrid (R. neglectus, Peck) between this and the last species occurs, with characters intermediate between the two, and growing with them.*

§2. *Fruit, or collective drupes, not separating from the juicy prolonged receptacle, mostly ovate or oblong, blackish; stems prickly and flowers white.*—BLACKBERRY.

5. **R. villosus**, Ait. COMMON OR HIGH BLACKBERRY. Shrubby (1-6° high), furrowed, upright or reclining, armed with stout curved prickles; branchlets, stalks, and lower surface of the leaves hairy and glandular; leaflets 3 (or pedately 5), ovate, pointed, unequally serrate, the terminal ones somewhat heart-shaped, conspicuously stalked; flowers racemed, numerous; bracts short; sepals linear-pointed, much shorter than the obovate-oblong spreading petals.—Borders of thickets, etc., common, N.S. westward, and very variable in size, aspect, and shape of fruit.

6. **R. Canadensis**, L. LOW BLACKBERRY. DEWBERRY. *Shrubby, extensively trailing, slightly prickly; leaflets 3 (or pedately 5-7), oval or ovate-lanceolate, mostly pointed, thin, nearly smooth, sharply cut-serrate; flowers racemed, with leaf-like bracts.—Dry fields, common; Newf., Ont., west to Central Minn. and E. Kan.*

7. **R. hispidus**, L. RUNNING SWAMP-BLACKBERRY. *Stems slender, scarcely woody, extensively procumbent, beset with small reflexed prickles; leaflets 3 (or rarely pedately 5), smooth, thickish, mostly persistent, obovate, obtuse, coarsely serrate, entire toward the base; peduncles leafless, several-flowered, often bristly; flowers small; fruit of few grains, black.—In low woods or swampy grassy ground, N. Scotia to Ont.*

5. DALIBARDA, L.

Calyx deeply 5-6-parted, 3 of the divisions larger and toothed. Petals 5, sessile, deciduous. Stamens many. Ovaries 5-10, becoming nearly dry seed-like drupes; styles terminal, deciduous.—Low perennials, with creeping and densely tufted stems or rootstocks, and roundish-heart-shaped crenate leaves on slender petioles. Flowers 1 or 2, white, on scape-like peduncles. (Named in honor of *Thomas Dalibard*, a French botanist of the time of Linnæus.)

1. *D. repens*, L. Downy; sepals spreading in the flower, converging and enclosing the fruit.—Wooded banks; N.S. to Ont. June-Aug.—In aspect and foliage resembling a stemless Violet.

6. GEUM, L. AVENS.

Calyx bell-shaped or flattish, deeply 5-cleft, usually with 5 small bractlets at the sinuses. Petals 5. Stamens many. Achenes numerous, heaped on a conical or cylindrical dry receptacle, the long persistent styles forming hairy or naked and straight or jointed tails. Seed erect; radicle inferior.—Perennial herbs, with pinnate or lyrate leaves. (A name used by Pliny, of unknown meaning.)

§ 1. *GEUM* proper. *Styles jointed and bent near the middle, the upper part deciduous and mostly hairy, the lower naked and hooked, becoming elongated; head of fruit sessile in the calyx; calyx-lobes reflexed.*

* *Petals white or pale greenish-yellow, small, spatulate or oblong; stipules small.*

1. *G. album*, Gmelin. *Smoothish or softly pubescent; stem slender (2' high); root-leaves of 3-5 leaflets, or simple and rounded, with a few minute leaflets on the petiole below; those of the stem 3-divided or lobed, or only toothed; hairs upon the long slender peduncles ascending or spreading; receptacle of the fruit densely bristly-hirsute.*—Borders of woods, etc.; common. May-Aug.

** *Petals golden-yellow, conspicuous, broadly-obovate, exceeding the calyx; stipules larger and all deeply cut.*

2. *G. macrophyllum*, Willd. *Bristly-hairy, stout (1-3' high); root-leaves lyrate and interruptedly pinnate, with the terminal leaflet very large and round-heart-shaped; lateral leaflets of the stem-leaves 2-4, minute, the terminal roundish, 3-cleft, the lobes*

wedge-form and rounded; receptacle nearly naked.—N. Scotia and N. Eng. to Minn., Mo., and westward. June. (Eu.)

3. *G. strictum*, Ait. Somewhat hairy (3-5° high); root-leaves interruptedly pinnate, the leaflets wedge-obovate; *leaflets of the stem-leaves* 3-5, rhombic-ovate or oblong, acute; receptacle downy.—Moist meadows, Newf. and westward. July, Aug. (Eu.)

§ 2. CARYOPHYLLATA. Style jointed and bent in the middle, the upper joint plumose; flowers large; calyx erect or spreading; petals erect.

4. *G. rivale*, L. WATER, or PURPLE AVENS. Stems nearly simple, several-flowered (2° high); root-leaves lyrate and interruptedly pinnate, those of the stem few, 3-foliate or 3-lobed; petals dilated-obovate, retuse, contracted into a claw, purplish-orange; head of fruit stalked in the brown-purple calyx.—Bogs and wet meadows, Newf. and westward.—Flowers nodding; pedicels erect in fruit. (Eu.)

7. FRAGARIA, TOURN. STRAWBERRY.

Flowers nearly as in *Potentilla*. Styles deeply lateral. Receptacle in fruit much enlarged and conical, becoming pulpy and scarlet, bearing the minute dry achenes scattered over its surface.—Stemless perennials, with runners, and with white or rose flowers on scapes. Leaves radical; leaflets 3, obovate-wedge-form, coarsely serrate; stipules cohering with the base of the petioles, which with the scapes are usually hairy. (Name from the fragrance of the fruit.)—Flowering in spring. (The species are indiscriminately called WILD STRAWBERRY.)

1. *F. Virginiana*, Mill. Achenes imbedded in the deeply pitted fruiting receptacle, which usually has a narrow neck; calyx becoming erect after flowering and connivent over the hairy receptacle when sterile or unfructified; *leaflets of a firm or coriaceous texture*; the hairs of the scapes, and especially of the pedicels, silky and appressed.—Moist or rich woodlands, fields, etc.; common.

2. *F. vesca*, L. Achenes superficial on the glabrous conical or hemispherical fruiting receptacle (not sunk in pits); calyx remaining spreading or reflexed; hairs on the scape mostly widely spreading, on the pedicels appressed; *leaflets thin*, even the upper face strongly

marked by the veins.—Fields and rocky places; less common. (Eu.)

8. **POTENTILLA**, L. CINQUE-FOIL. FIVE-FINGER.

Calyx flat, deeply 5-cleft, with as many bractlets at the sinuses, thus appearing 10-cleft. Petals 5, usually roundish. Stamens many. Achenes many, collected in a head on the dry mostly pubescent or hairy receptacle; styles lateral or terminal, deciduous. Radicle superior.—Herbs, or rarely shrubs, with compound leaves, and solitary or cymose flowers; their parts rarely in fours. (Name a diminutive from *potens*, powerful, originally applied to *P. Anserina*, from its once reputed medicinal powers.)

§ 1. *Styles thickened and glandular toward the base; achenes glabrous, numerous; inflorescence cymose.*

* *Style terminal; flowers small, yellow; leaves pinnate or ternate.*

† *Annual or biennial; leaflets incisely serrate, not white-tomentose; stamens 5-20.*

1. **P. Norvegica**, L. *Stout, erect, hirsute ($\frac{1}{2}$ -2° high; leaves ternate; leaflets obovate or oblong-lanceolate; cyme, rather close, leafy; calyx large; stamens 15 (rarely 20).—Lab. westward. (Eu.)*

§ 2. *Styles filiform, not glandular at base; inflorescence cymose.*

* *Style terminal; achenes glabrous; stamens 20; herbaceous perennials, with rather large yellow flowers.*

† *Leaves palmate, of 3 or 5 leaflets; tomentose or villous.*

2. **P. argentea**, L. SILVERY CINQUE-FOIL. *Stems ascending, paniculately branched at the summit, many-flowered, white-woolly; leaflets 5, wedge-oblong, almost pinnatifid, entire toward the base, with revolute margins, green above, white with silvery wool beneath.—Dry barren fields, etc., N. Scotia to Ont. June-Sept. (Eu.)*

** *Style lateral; purple petals (shorter than the broad calyx) somewhat persistent; disk thick and hairy; achenes glabrous; hairy receptacle becoming large and spongy.*

3. **P. palustris**, Scop. MARSH FIVE-FINGER. *Stems stout, ascending from a decumbent rooting perennial base ($\frac{1}{2}$ -2° long), glabrous below; leaves pinnate; leaflets 5-7, oblong, serrate,*

lighter colored and more or less pubescent beneath ; flowers few in an open cyme ; calyx (1' broad) dark purple inside.—Lab. to the Pacific. (Eu.)

*** *Style attached below the middle ; achenes and receptacle densely villous ; woody perennials.*

4. **P. fruticosa**, L. SHRUBBY CINQUE-FOIL. *Stem erect, shrubby (1-4° high), much branched ; leaves pinnate ; leaflets 5-7, crowded, oblong-lanceolate, entire, silky, usually whiter beneath and the margins revolute ; petals yellow, orbicular.*—Wet grounds, Lab. north and westward to the Pacific. June-Sept. (Eu.)

5. **P. tridentata**, Ait. THREE-TOOTHED C. *Stems low (1-10' high), rather woody at base, tufted, ascending, cymosely several-flowered ; leaves palmate ; leaflets 3, wedge-oblong, nearly smooth, thick, coarsely 3-toothed at the apex ; petals white ; achenes and receptacle very hairy.*—Lab. north and westward.

§ 3. *Style filiform, lateral ; peduncles axillary, solitary, 1-flowered ; achenes glabrous ; receptacle very villous ; herbaceous perennials, with yellow flowers.*

6. **P. Anserina**, L. SILVER-WEED. *Spreading by slender many-jointed runners, white-tomentose and silky-villous ; leaves all radical, pinnate ; leaflets 7-21, with smaller ones interposed, oblong, sharply serrate, silky tomentose at least beneath ; bractlets and stipules often incisely cleft ; peduncles elongated.*—Brackish marshes and river banks. (Eu.)

7. **P. Canadensis**, L. COMMON CINQUE-FOIL OR FIVE-FINGER. *Stems slender and decumbent or prostrate, or sometimes erect ; pubescence villous, often scanty ; leaves ternate, but apparently quin-ate by the parting of the lateral leaflets ; leaflets cuneate-oblong or obovate, incisely serrate, nearly glabrous above ; bractlets entire.*—Dry soil ; N. S. to Ont. Common and variable. Apr.-July.—Often producing summer runners.

9. **AGRIMONIA**, Tourn. AGRIMONY.

Calyx-tube top-shaped, contracted at the throat, beset with hooked bristles above, indurated in fruit and enclosing the 2 achenes ; the limb 5-cleft, closed after flowering. Petals 5. Stamens 5-15. Styles terminal. Seed suspended.—Perennial

herbs, with interruptedly pinnate leaves, and yellow flowers in slender spiked racemes; bracts 3-cleft. (Name a corruption of *Argemonia*.)

1. **A. Eupatoria**, L. COMMON AGRIMONY. *Leaflets 5-7 with minute ones intermixed, oblong-obovate, coarsely toothed; petals twice the length of the calyx.*—Borders of woods, common. July-Sept. (Eu.)

10. **POTERIUM**, L. BURNET.

Calyx with a top-shaped tube, constricted at the throat, persistent; the 4 broad petal-like spreading lobes imbricated in the bud, deciduous. Petals none. Stamens 4-12 or more, with flaccid filaments and short anthers. Pistils 1-3; the slender terminal style tipped with a tufted or brush-like stigma. Achene (commonly solitary) enclosed in the 4-angled dry and thickish closed calyx-tube. Seed suspended.—Chiefly perennial herbs, with unequally pinnate leaves, stipules coherent with the petiole, and small, often polygamous or dioecious flowers crowded in a dense head or spike at the summit of a long and naked peduncle, each bracteate and 2-bracteolate. (Name *ποτήριον*, a drinking cup, the foliage of Burnet having been used in the preparation of some medicinal drink.)

1. **P. Canadense**, Benth. and Hook. CANADIAN BURNET. Stamens 4, long-exserted, club-shaped, white, as is the whole of the elongated and cylindrical spike; stem 3-6° high; leaflets numerous, ovate or oblong-lanceolate, coarsely serrate, obtuse, heart-shaped at base, as if stipellate; stipules serrate.—Bogs and wet meadows, Newf. west and northward.

11. **ROSA**, Tourn. ROSE.

Calyx-tube urn-shaped, contracted at the mouth, becoming fleshy in fruit. Petals 5, obovate or obcordate, inserted with the many stamens into the edge of the hollow thin disk that lines the calyx-tube and within bears the numerous pistils below. Ovaries hairy, becoming bony achenes in fruit.—Shrubby and usually spiny or prickly, with odd-pinnate leaves, and stipules cohering with the petiole; stalks, foliage, etc., often bearing aromatic glands. Many of the species are very variable in their characters, and are often indeterminable upon imperfect specimens. (The ancient Latin name.)

* *Styles distinct ; sepals connivent after flowering and persistent ; pedicels and receptacles naked.*

† *Fruit globose ; infrastipular spines none ; acicular prickles often present.*

1. **R. blanda**, Ait. Stems 1-3° high, wholly unarmed (occasionally with a few or very rarely numerous prickles) ; stipules dilated, naked and entire, or slightly glandular-toothed ; leaflets 5-7, usually oblong-lanceolate, cuneate at base and petiolulate, simply serrate, not resinous ; flowers usually large, corymbose or solitary ; sepals hispid, entire.—On rocks and rocky shores, Newf. westward.

** *Styles distinct ; sepals spreading after flowering and deciduous ; infrastipular spines usually present, often with scattered prickles ; sepals, globose receptacle, and pedicel usually hispid ; teeth simple ; pubescence not resinous.*

† *Leaflets mostly finely many toothed.*

2. **R. Carolina**, L. Stems usually tall (1-7° high), with stout straight or usually more or less curved spines ; stipules long and very narrow ; leaflets dull green, 5-9 (usually 7), usually narrowly oblong and acute at each end and petiolulate, but often broader, usually pubescent beneath.—Borders of swamps and streams, N. S. to Ont., and westward.

†† *Leaflets coarsely toothed.*

3. **R. lucida**, Ehrh. Stems often tall and stout (a few inches to 6° high), with at length stout and usually more or less hooked spines ; stipules usually naked, more or less dilated ; leaflets (mostly 7) dark green, rather thick, smooth and often shining above ; flowers corymbose or solitary ; outer sepals frequently with 1 or 2 small lobes.—Margins of swamps or moist places. Newf. to Ont.

Naturalized species.

4. **R. rubiginosa**, L. SWEETBRIER. EGLANTINE. *Leaflets densely resinous beneath and aromatic, and doubly serrate ; the short pedicels and pinnatifid sepals hispid.* (Incl. *R. micrantha*, Smith ; less aromatic, with oblong fruit and glabrous styles.)—N. Scotia and Ont. to S. C. and Tenn. (Int. from Eu.)

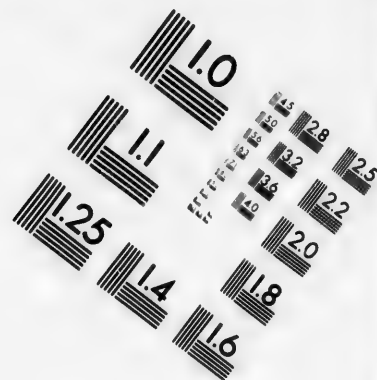
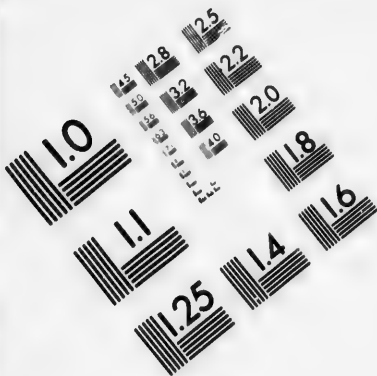
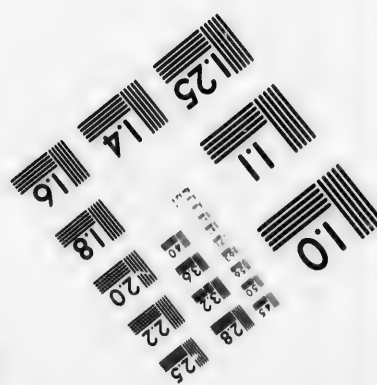
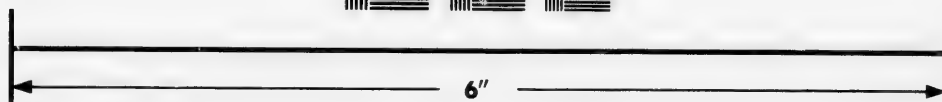
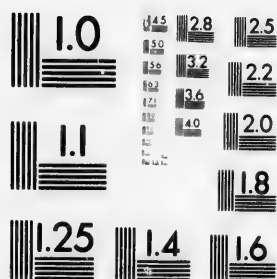


IMAGE EVALUATION TEST TARGET (MT-3)



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503



12. PYRUS, L. PEAR. APPLE.

Calyx-tube urn-shaped, the limb 5-cleft. Petals roundish or obovate. Stamens numerous. Styles 2-5. Pome fleshy or berry-like; the 2-5 carpels or cells of a papery or cartilaginous texture, 2-seeded.—Trees or shrubs, with handsome flowers in corymbed cymes. (The classical name of the Pear tree.)

§ 1. ADENORHACHIS. *Leaves simple, the midrib glandular along the upper side; cymes compound; styles united at base; fruit berry-like, small.*

1. *P. arbutifolia*, L. f. CHOK-BERRY. A shrub usually 1-3° high; leaves oblong or oblanceolate, mostly acute or acuminate, finely glandular-serrate, tomentose beneath; cyme tomentose; flowers white or reddish; fruit pear-shaped, or globose when ripe, small, red or purple, astringent.—Swamps and damp thickets; common, from N. Scotia to Q., Ont., and west to Minn., Ill., Mo., and La.

Var. *melanocarpa*, Hook. Nearly smooth throughout, with larger black fruit; leaves usually less acute.—Of apparently the same range.

§ 2. SORBUS. *Leaves odd-pinnate, with rather numerous leaflets; cymes compound; styles separate; pome berry-like, small.*

2. *P. Americana*, DC. AMERICAN MOUNTAIN-ASH. Tree or tall shrub, *nearly glabrous* or soon becoming so; *leaflets* 13-15, lanceolate, taper-pointed, sharply serrate with pointed teeth, bright green; cymes large and flat; berries globose, bright red, not larger than peas; *leaf-buds pointed, glabrous* and somewhat glutinous.—Swamps and mountain-woods, Newf., westward. Often cultivated.

3. *P. sambucifolia*, Cham. and Schlecht. *Leaflets oblong, oval, or lanceolate, mostly obtuse* or abruptly short-pointed, serrate (mostly doubly) with more spreading teeth, often pale beneath; cymes smaller; flowers and berries larger, the latter (4" broad) when young ovoid, at length globose; *leaf-buds sparingly hairy*; otherwise nearly as the preceding.—Lab. to northern N. Eng. and Lake Superior, and westward.

13. CRATÆGUS, L. HAWTHORN. WHITE THORN.

Calyx-tube urn-shaped, the limb 5-cleft. Petals 5, roundish. Stamens many, or only 10-5. Styles 1-5. Pome drupe-like, containing 1-5 bony 1-seeded stones.—Thorny shrubs or small trees, with simple and mostly lobed leaves, and white (rarely rose-colored) blossoms. (Name from κράτος, *strength*, on account of the hardness of the wood.)

* *Corymbs many-flowered.*

+ *Fruit large ($\frac{1}{2}$ -1' long), red; flowers large; styles and stones even in the same species 1-3 (when the fruit is ovoid or pear-shaped) or 4-5 (in globular fruit); stipules, calyx-teeth, bracts, etc., often beset with glands; shrubs or low trees. [Species as characterized by Prof. C. S. SARGENT.]*

1. **C. coccinea**, L. Branches reddish; spines stout, chestnut-brown; villous-pubescent on the shoots, glandular peduncles, and calyx; leaves on slender petioles, thin, pubescent beneath or often glabrous, round-ovate, cuneate or subcordate at base, acutely glandular-toothed, sometimes cut-lobed; flowers $\frac{1}{2}$ ' broad; fruit coral-red, globose or obovate, $\frac{1}{2}$ ' broad.—Newf. westward.

2. **C. tomentosa**, L. Branches gray, rarely with stout gray spines; shoots, peduncles, and calyx villous-pubescent; glands none; leaves large, pale, prominently veined, densely pubescent beneath, ovate or ovate-oblong, sharply serrate, usually incisely lobed, contracted into a margined petiole; flowers small, ill-scented; fruit dull red, obovate, rarely globose ($\frac{1}{2}$ ' broad), upright.—N. S. to Ont. In flower 2-3 weeks after n. 1.

3. **C. punctata**, Jacq. Branches horizontal; glands none; leaves smaller, mostly wedge-obovate, attenuate and entire below, unequally toothed above, rarely lobed, villous-pubescent becoming smooth but dull, the many veins more impressed, prominent beneath; fruit globose (1' broad), red or bright yellow. (*C. tomentosa*, var. *punctata*, Gray.)—Quebec to Ont. and south to Ga.

4. **C. Crus-galli**, L. COCKSPUR THORN. Branches horizontal, with slender thorns often 4' long; glabrous; leaves thick, dark green, shining above, wedge-obovate and oblanceolate, tapering into a very short petiole, serrate above the middle; fruit globular, dull red ($\frac{1}{2}$ ' broad).—Thickets, common. Ont.

14. AMELANCHIER, Medic. JUNE-BERRY.

Calyx 5-cleft; lobes downy within. Petals oblong, elongated. Stamens numerous, short. Styles 5, united below. Ovary 5-celled, each cell 2-ovuled, but a projection grows from the back of each and forms a false cartilaginous partition; the berry-like pome thus 10-celled, with one seed in each cell (when all ripen).—Small trees or shrubs, with simple sharply serrated leaves, and white racemose flowers. (*Amelancier* is the name of *A. vulgaris* in Savoy.)

1. **A. Canadensis**, Torr. and Gray. SHAD-BUSH. SERVICE-BERRY. A tree 10–30° high, nearly or soon glabrous; leaves ovate to ovate-oblong, usually somewhat cordate at base, pointed, very sharply serrate, 1–3½' long; bracts and stipules very long silky-ciliate; flowers large, in drooping nearly glabrous racemes; petals oblong, 6–8" long; fruit on elongated pedicels, globose, crimson or purplish, sweet and edible. (Var. *Botryapium*, Torr. and Gray).—Dry open woodlands; Newf. and Ont. Fruit ripening in June. Var. **ROTUNDIFOLIA** (Torr. and Gray), appears to be only a broad-leaved form.

Var. (?) **oblongifolia**, Torr. and Gray. A smaller tree or shrub (6–10° high), the young leaves and racemes densely white-tomentose; leaves oblong or sometimes rather broadly elliptical, acute, mostly rounded at base, finely serrate, 1–2' long; flowers in denser and shorter racemes; petals 3–4" long, oblong-spatulate; fruit similar but more juicy, on shorter pedicels.—Low moist grounds or swampy woods; N. S., westward.

ORDER 27. SAXIFRAGACEÆ (SAXIFRAGE FAMILY).

Herbs or shrubs, of various aspect, distinguishable from Rosacæ by having copious albumen in the seeds, opposite as well as alternate leaves, and usually no stipules, the stamens mostly definite, and the carpels commonly fewer than the sepals, either separate or partly so, or all combined into one compound pistil. Calyx either free or adherent, usually persistent or withering away. Stamens and petals almost always inserted on the calyx. Ovules anatropous.

Tribe I. SAXIFRAGEÆ. Herbs. Leaves alternate (rarely opposite in n. 3). Fruit dry, capsular or follicular, the styles or tips of the carpels distinct.

*Ovary 2- (rarely 3) celled with axile placentas, or of as many nearly distinct carpels.

1. **Saxifraga.** Flowers perfect. Petals 5. Stamens 10. Seeds numerous, with a close coat.
 ** Ovary 1-celled, with 2 parietal placentas alternate with the stigmas.
 Sterile stamens none.
 2. **Tiarella.** Calyx nearly free from the slender ovary. Petals entire. Stamens 10. Placentas nearly basal.
 3. **Mitella.** Calyx partly cohering with the depressed ovary. Petals small, pinnatifid. Stamens 10.
 4. **Chrysosplenium.** Calyx-tube coherent with the ovary. Petals none. Stamens 10.
 *** Ovary 1-celled, with 3-4 parietal placentas opposite the sessile stigmas. A cluster of united sterile filaments at the base of each petal.
 5. **Parnassia.** Sepals, petals and proper stamens 5. Peduncle scape-like, 1-flowered.
- Tribe II. RIBESIÆ.** Shrubs. Leaves alternate and simple, with stipules adnate to the petiole or wanting. Fruit a berry.
6. **Ribes.** Calyx-tube adnate to the 1-celled ovary. Placentas 2, parietal, many-seeded.

1. SAXIFRAGA, L. SAXIFRAGE.

Calyx either free from or cohering with the base of the ovary, 5-cleft or parted. Petals 5, entire, imbricated in the bud, commonly deciduous. Stamens 10. Styles 2. Capsule 2-beaked, 2-celled, opening down or between the beaks, or sometimes 2 almost separate follicles. Seeds numerous, with a close coat.—Chiefly perennial herbs, with the root-leaves clustered, those of the stem mostly alternate. (Name from *saxum*, a rock, and *frango*, to break; many species rooting in the clefts of rocks.)

* *Stems ascending; leaves alternate; calyx coherent below with the capsule.*

1. **S. aizoides, L.** YELLOW MOUNTAIN-S. Low (3-5' high), in tufts, with few or several corymbose flowers; *leaves linear-lanceolate, entire, fleshy, distantly spinulose-ciliate; petals yellow, spotted with orange, oblong.*—Lab. and Anticosti, west to R. Mts.

* * *Leaves clustered at the root; scape many-flowered, erect, clammy-pubescent.*

† *Petals all alike.*

2. **S. Aizoon, Jacq.** Scape 5-10' high; *leaves persistent, thick, spatulate, with white cartilaginous toothed margins; calyx partly adherent; petals obovate, cream-color, often spotted at the base.*—Moist rocks, Lab. west, and northward. (Eu.)

3. *S. Virginiensis*, Michx. EARLY S. Low (4-9' high); leaves obovate or oval spatulate, narrowed into a broad petiole, crenate-toothed, thickish; flowers in a clustered cyme, which is at length open and loosely paniced; lobes of the nearly free calyx erect, not half the length of the oblong obtuse (white) petals; follicles united merely at the base, divergent, purplish.—Exposed rocks and dry hillsides; N. Brunswick, westward, common. April-June.

2. TIARELLA, L. FALSE MITRE-WORT.

Calyx bell-shaped, nearly free from the ovary, 5-parted. Petals 5, with claws, entire. Stamens 10, long and slender. Styles 2. Capsule membranaceous, 1-celled, 2-valved; the valves unequal. Seeds few, at the base of each parietal placenta, globular, smooth.—Perennials; flowers white. (Name a diminutive from *tiāpa*, a tiara, or turban, from the form of the pod, or rather pistil, which is like that of *Mitella*, to which the name of *Mitre-wort* properly belongs.)

1. *T. cordifolia*, L. Leaves from the rootstock or summer runners heart-shaped, sharply lobed and toothed, sparsely hairy above, downy beneath; stem leafless or rarely with 1 or 2 leaves (5-12' high); raceme simple; petals oblong, often subserrate.—Rich rocky woods, N. S. to Ont. April, May.

3. MITELLA, Tourn. MITRE-WORT. BISHOP'S-CAP.

Calyx short, coherent with the base of the ovary, 5-cleft. Petals 5, slender, pinnatifid. Stamens 5 or 10, included. Styles 2, very short. Capsule short, 2-beaked, 1-celled, with 2 parietal or rather basal several-seeded placentæ, 2-valved at the summit. Seeds smooth and shining.—Low and slender perennials, with round heart-shaped alternate leaves on the rootstock or runners, on slender petioles; those on the flowering stems opposite, if any. Flowers small, in a simple slender raceme or spike. Fruit soon widely deliscent. (Diminutive of *mitra*, a cap, alluding to the form of the young pod.)

1. *M. diphylla*, L. Hairy; leaves heart-shaped, acute, somewhat 3-5-lobed, toothed, those on the many-flowered stem 2, opposite, nearly sessile, with interfoliar stipules; flowers white, in a raceme 6-8' long; stamens 10.—Hillsides in rich woods; Q. and Ont., west to Minn. and Mo. May.

2. **M. nuda**, L. Small and slender; *leaves rounded or kidney-form*, deeply and doubly crenate; *stem usually leafless, few-flowered*, very slender (4-6' high); flowers greenish; stamens 10.—Deep moist woods, in moss, N.S. to the Pacific and northward. May-July.

4. **CHRYOSPLENIUM**, Tourn. GOLDEN SAXIFRAGE.

Calyx-tube coherent with the ovary; the blunt lobes 4-5, yellow within. Petals none. Stamens 8-10, very short, inserted on a conspicuous disk. Styles 2. Capsule inversely heart-shaped or 2-lobed, flattened, very short, 1-celled with 2 parietal placentæ, 2-valved at the top, many-seeded.—Low and small smooth herbs, with tender succulent leaves, and small solitary or leafy-cymed flowers. (Name compounded of χρυσός, *golden*, and σπλήν, *the spleen*; probably from some reputed medicinal qualities.)

1. **C. Americanum**, Schwein. Stems slender, *decumbent* and forking; *leaves principally opposite*, roundish or somewhat heart-shaped, obscurely crenate-lobed; *flowers distant*, inconspicuous, *nearly sessile* (greenish tinged with yellow or purple).—Cold wet places, N. Scotia to Ont.

5. **PARNASSIA**, Tourn. GRASS OF PARNASSUS.

Sepals 5, imbricated in the bud, slightly united at the base, and sometimes also with the base of the ovary, persistent. Petals 5, veiny, spreading, at length deciduous, imbricated in the bud; a cluster of somewhat united gland-tipped sterile filaments at the base of each. Proper stamens 5, alternate with the petals, persistent; anthers introrse or subextrorse. Ovary 1-celled, with 4 projecting parietal placentæ; stigmas 4, sessile, directly over the placentæ. Capsule 4-valved, the valves bearing the placentæ on their middle. Seeds very numerous, anatropous, with a thick wing-like seed-coat and little if any albumen. Embryo straight; cotyledons very short.—Perennial smooth herbs, with entire leaves, and solitary flowers on long scape-like stems, which usually bear a single sessile leaf. Petals white, with greenish or yellowish veins. (Named from Mount Parnassus; called Grass of Parnassus by Dioscorides.)

1. **P. parviflora**, DC. *Petals sessile*, little longer than the calyx (3" long); *sterile filaments about 7 in each set*, slender; *leaves ovate or oblong*, tapering at base.—Sandy banks, Lab. and westward.

2. *P. palustris*, L. Scapes 3-10' high; leaves heart-shaped; flower nearly 1' broad; *petals sessile*, rather longer than the calyx, few-veined; *sterile filaments* 9-15 in each set, slender.—Same range as the last. (Eu.)

3. *P. Caroliniana*, Michx. Scapes 9'-2° high; flower 1-1½' broad; *petals sessile*, more than twice as long as the calyx, many-veined; *sterile filaments* 3 in each set, stout, distinct almost to the base; leaves thickish, ovate or rounded, often heart-shaped, usually but one low down on the scape and clasping.—Wet banks, N. Brunswick, Ont.

6. RIBES, L. CURRANT. GOOSEBERRY.

Calyx 5-lobed, often colored; the tube coherent with the ovary. Petals 5, inserted in the throat of the calyx, small. Stamens 5, alternate with the petals. Ovary 1-celled, with 2 parietal placentæ and 2 distinct or united styles. Berry crowned with the shrivelled remains of the calyx; the surface of the numerous seeds swelling into a gelatinous outer coat investing a crustaceous one. Embryo minute at the base of hard albumen.—Low, sometimes prickly shrubs, with alternate and palmately-lobed leaves, which are plaited in the bud (except in one species), often fascicled on the branches; the small flowers from the same clusters, or from separate lateral buds. (From *riebs*, a German popular name for the currant. *Grossularia* was the proper name to have been adopted for the genus.)

§ 1. GROSSULARIA. GOOSEBERRY. *Stems most'y bearing thorns at the base of the leafstalks or clusters of leaves, and often with scattered bristly prickles; berries prickly or smooth. (Our species are indiscriminately called WILD GOOSEBERRY; the flowers greenish.)*

* *Peduncles* 1-3-flowered; *calyx* as high as broad; *leaves* roundish-heart-shaped, 3-5-lobed.

† *Calyx-lobes* decidedly shorter than the tube; *berries* apt to be prickly.

1. *R. Cynosbati*, L. Stamens and undivided style not longer than the broadly bell-shaped calyx; berries large, armed with long prickles or rarely smooth.—Rocky woods, N. Brunswick to Man.

†† Calyx-lobes decidedly longer than the short and rather narrow tube ;
berries smooth, purple, sweet and pleasant.

2. *R. oxyacanthoides*, L. Peduncles very short, flowers greenish or dull purplish ; stamens usually scarcely equalling the rather broadly oblong calyx-lobes. (*R. hirtellum*, Michx.)—Newf. to the Pacific. The common smooth-fruited gooseberry of the north, the whitish spines often numerous.

§ 2. *RIBESIA*. CURRANT. Thornless and prickless ; racemes few-many-flowered ; stamens short.

3. *R. prostratum*, L'Her. FETID CURRANT. Stems reclined ; leaves deeply heart-shaped, 5-7-lobed, smooth, the lobes ovate, acute, doubly-serrate ; racemes erect, slender, calyx flattish ; pedicels and the (pale red) fruit glandular-bristly.—Cold damp woods and rocks, Lab. to the Rocky Mts.

4. *R. floridum*, L'Her. WILD BLACK CURRANT. Leaves sprinkled with resinous dots, slightly heart-shaped, sharply 3-5-lobed, doubly serrate ; racemes drooping, downy ; bracts longer than the pedicels ; flowers large, whitish ; calyx tubular-bell-shaped, smooth ; fruit round-ovoid, black, smooth.—Woods throughout Canada.

5. *R. rubrum*, L. var. *subglandulosum*, Maxim. RED CURRANT. Stems straggling or reclined ; leaves somewhat heart-shaped, obtusely 3-5-lobed, serrate, downy beneath when young ; racemes from lateral buds distinct from the leaf-buds, drooping, calyx flat (green or purplish) ; fruit globose, smooth, red.—Cold bogs and damp woods. N. S. to the Pacific.

ORDER 23. CRASSULACEÆ (ORPINE FAMILY).

Succulent herbs, with perfectly symmetrical flowers ; viz., the petals and pistils equalling the sepals in number (3-20), and the stamens the same or double their number,—technically different from Saxifragæ only in this complete symmetry, and in the carpels (in most of the genera) being quite distinct from each other. Also, instead of a perigynous disk, there are usually little scales on the receptacle, one behind each carpel. Fruit dry and dehiscent ; the pods (follicles) opening down the ventral suture, many—rarely few-seeded.—Stipules none. Flowers usually cymose, small. Leaves mostly sessile.

* Leaves, etc., thick and succulent. Carpels distinct.

1. **Sedum**. Sepals, petals, and pistils 4 or 5. Stamens 8-10. seeds many.

1. **SEDUM**, Tourn. STONE-CROP. ORPINE.

Sepals and petals 4 or 5. Stamens 8 or 10. Follicles many-seeded; a little scale at the base of each.—Chiefly perennial, smooth, and thick-leaved herbs, with the flowers cymose or one-sided. Petals almost always narrow and acute or pointed. (Name from *sedeo*, to sit, alluding to the manner in which these plants fix themselves upon rocks and walls.)

* *Flowers perfect and sessile, as it were spiked along one side of spreading flowering branches or of the divisions of a scorpioid cyme, the first or central flower mostly 5-merous and 10-androus, the others often 4-merous and 8-androus.*

† *Flowers yellow.*

1. **S. acre**, L. MOSSY STONE-CROP. Spreading on the ground, moss-like; leaves very small, alternate, almost imbricated on the branches, ovate, very thick; petals yellow.—Escaped from cultivation to rocky roadsides, etc. July. (Nat. from Eu.)

** *Flowers in a terminal naked and regular cyme or cluster, more or less peduncled; leaves flat, obovate or oblong, mostly alternate.*

† *Flowers perfect, 5-merous, 10-androus.*

2. **S. Telephium**, L. GARDEN ORPINE OR LIVE-FOR-EVER. Stems erect (2° high), stout; leaves oval, obtuse, toothed; cymes compound; petals purple, oblong-lanceolate; follicles abruptly pointed with a short style.—Rocks and banks, escaped from cultivation in some places. July. (Adv. from Eu.)

†† *Flowers dioecious, mostly 4-merous, and 8-androus.*

3. **S. Rhodiola**, DC. ROSEROOT. Stems erect (5-10' high); leaves oblong or oval, smaller than in the preceding; flowers in a close cyme, greenish-yellow, or the fertile turning purplish.—Throughout Arctic America, extending southward to the coast of Maine, and cliffs of Delaware River; also in the western mountains. May, June. (Eu.)

ORDER 29. **DROSERACEÆ** (SUNDEW FAMILY).

Bog-herbs, mostly glandular-haired, with regular hypogynous flowers, pentamerous and withering-persistent calyx, corolla, and stamens, the

anthers fixed by the middle and turned outward, and a 1-celled capsule with twice as many styles or stigmas as there are parietal placentæ.—Calyx imbricated. Petals convolute. Seeds numerous, anatropous, with a short and minute embryo at the base of the albumen.—Leaves circinate in the bud, *i.e.*, rolled up from the apex to the base, as in Ferns. A small family of insectivorous plants.

1. *DROSERA*, L. SUNDEW.

Stamens 5. Styles 3, or sometimes 5, deeply 2-parted so that they are taken for 6 or 10, slender, stigmatose above on the inner face. Capsule 3- (rarely 5) valved; the valves bearing the numerous seeds on their middle for the whole length.—Low perennials or biennials; the leaves clothed with reddish gland-bearing bristles, in our species all in a tuft at the base; the naked scape bearing the flowers in a 1-sided raceme-like inflorescence, which nods at the undeveloped apex, so that the fresh-blown flower (which opens only in sunshine) is always highest. The plants yield a purple stain to paper. (The glands of the leaves exude drops of a clear glutinous fluid, glittering like dew-drops, whence the name, from *ῥοσσερός*, dewy.)

1. *D. rotundifolia*, L. ROUND-LEAVED SUNDEW. *Leaves orbicular, abruptly narrowed into the spreading hairy petioles; seeds spindle-shaped, the coat loose and chaff-like; flowers white, the parts sometimes in sixes.*—Peat-bogs, Lab. to the Pacific and southward; common. July, August. (Eu.)

2. *D. intermedia*, Hayne, var. *Americana*, DC. *Leaves spatulate-oblong, tapering into the long rather erect naked petioles; seeds oblong, with a rough close coat; flowers white.* (*D. longifolia*, Gray, Manual.)—Bogs, N.B. to Man. June–Aug. (Eu.)

ORDER 30. *HAMAMELIDÆ* (WITCH-HAZEL FAMILY).

Shrubs or trees, with alternate simple leaves and deciduous stipules; flowers in heads or spikes, often polygamous or monœcious; the calyx cohering with the base of the ovary, which consists of 2 pistils united below, and forms a 2-beaked, 2-celled woody capsule, opening at the summit, with a single bony seed in each cell, or several, only one or two of them ripening.—Petals inserted on the calyx, narrow, valvate or involute in the bud, or often none at all. Stamens twice as

many as the petals, and half of them sterile and changed into scales, or numerous. Seeds anatropous. Embryo large and straight, in scanty albumen; cotyledons broad and flat.

* Flowers with a manifest calyx, or calyx and corolla, and a single ovule suspended from the summit of each cell.

1. **Hamamelis.** Petals 4, strap-shaped. Stamens and scales each 4, short.

1. **HAMAMELIS, L. WITCH-HAZEL.**

Flowers in little axillary clusters or heads, usually surrounded by a scale-like 3-leaved involucre. Calyx 4-parted, and with 2 or 3 bractlets at its base. Petals 4, strap-shaped, long and narrow, spirally involute in the bud. Stamens 8, very short; the 4 alternate with the petals anther-bearing, the others imperfect and scale-like. Styles 2, short. Capsule opening loculicidally from the top; the outer coat separating from the inner, which encloses the single large and bony seed in each cell, but soon bursts elastically into two pieces.—Tall shrubs, with straight-veined leaves, and yellow, perfect or polygamous flowers. (From *ἄμα*, at the same time with, and *μηλίς*, an apple-tree; a name anciently applied to the Medlar, or some similar tree.)

1. **H. Virginiana, L.** Leaves obovate or oval, wavy-toothed, somewhat downy when young; blossoming late in autumn, when the leaves are falling, and maturing its seeds the next summer.—Damp woods, N.S. to Ont.

ORDER 31. **ONAGRACEÆ** (EVENING-PRIMROSE FAMILY).

Herbs, with 4-merous (sometimes 2-3 or 5-6-merous) perfect and symmetrical flowers; the tube of the calyx cohering with the 2-4-celled ovary, its lobes valvate in the bud, or obsolete; the petals convolute in the bud, sometimes wanting; and the stamens as many or twice as many as the petals or calyx-lobes, inserted on the summit of the calyx-tube. Style single, slender; stigma 2-4-lobed or capitate. Pollen grains often connected by cobwebby threads. Seeds anatropous, small, without albumen.—Mostly herbs, with opposite or alternate leaves. Stipules none or glandular.

* Parts of the flower in fours or more.

† Fruit a many-seeded pod, usually loculicidal.

‡ Calyx-tube prolonged beyond the ovary (scarcely so in n. 1) and deciduous from it. Flowers 4-merous.

1. **Epilobium.** Seeds silky-tufted. Flowers small, not yellow. Lower leaves often opposite.
2. **Oenothera.** Seeds naked. Flowers mostly yellow. Leaves alternate.
* * Parts of the flower in twos. Leaves opposite.
3. **Circœa.** Petals 2, obcordate or 2-lobed. Stamens 2. Fruit 1-2 seeded, bristly.

1. **EPILOBIUM, L. WILLOW-HERB.**

Calyx-tube not or scarcely prolonged beyond the ovary ; the limb 4-cleft or -parted, deciduous. Petals 4. Stamens 8 ; anthers short. Capsule linear, many-seeded. Seeds with a tuft of long hairs at the end.—Mostly perennials, with nearly sessile leaves, and violet, purple, or white flowers ; in summer. A large genus, many of its species of difficult limitation. (Name composed of *ἐπι*, upon, and *λίον*, a little pod.)

§ 1. *Flowers large, purple, in a long raceme ; calyx-limb deeply parted ; petals entire ; stamens and style successively deflexed ; stigma of 4 long lobes.*

1. **E. angustifolium, L. GREAT WILLOW-HERB. FIRE-WEED.** Stem simple, tall (4-7) ; leaves scattered, ample, lanceolate, nearly entire.—Low grounds, especially in newly cleared lands ; Lab., west, and far north. (Eu., Asia.)

§ 2. *Flowers mostly small and corymbed or panicked ; calyx-limb 4-cleft ; petals mostly deeply notched ; stamens and style erect.*

* *Stigma clavate ; stem somewhat quadrangular with 2-4 ridges or hairy lines decurrent from some of the leaves.*

† *Tall and mostly branching, many-flowered ; leaves rather large, toothed, not revolute, the lower opposite ; seeds papillose.*

2. **E. coloratum, Muhl.** Somewhat hoary-pubescent above or glandular, 1-3° high ; leaves lanceolate, sharply serrulate or denticulate, acute, narrowed to conspicuous petioles ; flowers pale, more or less nodding ; peduncles shorter than the leaves ; seeds dark, unappendaged ; coma cinnamon-color.—Wet places, common.

†† *Mostly low, slender and simple (except forms of n. 3) ; leaves chiefly opposite, less toothed ; flowers few, nodding ; seeds appendaged at the apex.*

‡ *Seeds papillosed-roughened.*

3. *E. palustre*, L. Slender, 1° high or less, often branched, finely pubescent; leaves erect or ascending, about equalling or longer than the internodes, sessile, linear to linear-lanceolate or elliptic-oblong, obtuse, with revolute margins; capsules pubescent to nearly glabrous, mostly shorter than the slender peduncles; seeds fusiform, with long beak. (*E. palustre*, var. *lineare*, *Man.*, in part.)—Lab. to N. W. T. (Eu.)

2. *ÆNOTHERA*, L. EVENING PRIMROSE.

Calyx-tube prolonged beyond the ovary, deciduous; the lobes 4, reflexed. Petals 4. Stamens 8; anthers mostly linear and versatile. Capsule 4-valved, many-seeded. Seeds naked.—Leaves alternate. Flowers yellow, white or rose-color. (An old name, of unknown meaning, for a species of *Epilobium*.)

§ 1. *Stigma-lobes linear, elongated; calyx-tube linear, slightly dilated at the throat; anthers linear.*

* *Caulescent annuals or biennials; flowers erect in the bud, nocturnal, yellow, the calyx-tips free; capsules sessile, coriaceous; seeds in two rows in each cell.*

† *Flowers in a leafy spike; capsules stout, oblong, slightly narrowed above.*

1. *Æ. biennis*, L. COMMON EVENING PRIMROSE. Rather stout, erect (1-5° high), usually simple, more or less pubescent and hairy; leaves lanceolate to oblong- or rarely ovate-lanceolate (2-6' long), acute or acuminate, repandly denticulate, the lowest petioled; calyx-tube 1-2½' long, the tips of the sepals contiguous; petals ½-¾' long; capsule more or less pubescent or hirsute.—Throughout Canada.

Var. *grandiflora*, Lindl., has petals as long as the calyx-tube (1-2½' long).—Same range as the type, but not so common east.

** *Caulescent; flowers diurnal, yellow and erect in the bud; capsules obovate or clavate, quadrangular, the valves ribbed and the angles more or less strongly winged.*

2. *Æ. pumila*, L. Biennial, puberulent, 1-2° high; leaves mostly glabrous, entire, obtuse, the radical spatulate, the cauline narrowly oblanceolate; flowers loosely spiked; corolla 4-12" long; capsule glabrous, oblong-clavate, 3-6" long, sessile or on a short

pedicel, *slightly winged*. (Incl. *C. chrysantha*, *Michx.*)—Dry fields, N. Scotia to Man. June.

3. *C. fruticosa*, L. SUNDROPS. Biennial or perennial, erect, often tall and stout (1-3° high), villous-pubescent or puberulent, or nearly glabrous; leaves oblong to linear-lanceolate, *mostly denticulate*; raceme corymbed or loose; petals 9-12" long; capsule sessile or with a pedicel shorter than itself, prominently ribbed and strongly winged.—Common, variable. N. S. and Q.

3. CIRCÆA, Tourn. ENCHANTER'S NIGHTSHADE.

Calyx-tube slightly prolonged, the end filled by a cup-shaped disk, deciduous; lobes 2, reflexed. Petals 2, inversely heart-shaped. Stamens 2. Fruit indehiscent, small and burr-like, bristly with hooked hairs, 1-2-celled; cells 1-seeded.—Low and inconspicuous perennials, in cool or damp woods, with opposite thin leaves on slender petioles, and small whitish flowers in racemes, produced in summer. (Named from *Circe*, the enchantress.)

1. *C. Lutetiana*, L. Taller (1-2° high); leaves ovate, slightly toothed; bracts none; hairs of the roundish 2-celled fruit bristly.—Very common. N. S. to Ont. (Eu.)

2. *C. alpina*, L. Low (3-8' high), smooth and weak; leaves heart-shaped, thin, shining, coarsely toothed; bracts minute; hairs of the obovate-oblong 1-celled fruit soft and slender.—Deep woods, N. S. to the Pacific. (Eu.)

ORDER 32. CUCURBITACEÆ (GOURD FAMILY).

Mostly succulent herbs with tendrils, *dicocious or monœcious* (often gamopetalous) flowers, the calyx-tube cohering with the 1-3-celled ovary, and the 5 or usually $2\frac{1}{2}$ stamens (i.e., 1 with a 1-celled and 2 with 2-celled anthers) commonly united by their often tortuous anthers, and sometimes also by the filaments. Fruit (pepo) fleshy, or sometimes membranaceous.—Limb of the calyx and corolla usually more or less combined. Stigmas 2 or 3. Seeds large, usually flat, anatropous, with no albumen. Cotyledons leaf-like. Leaves alternate, palmately lobed or veined.—Mostly a tropical or subtropical order; represented in cultivation by the GOURD (*Lagenaria vulgaris*), PUMPKIN and SQUASH (species of *Cucurbita*),

MUSKMELON (*CUCUMIS MELO*), **CUCUMBER** (*C. SATIVUS*), and **WATER-MELON** (*CITRULLUS VULGARIS*).

* Fruit prickly. Seeds few, erect or pendulous. Flowers white. Annual.

† Ovary 1-celled. Seed solitary, pendulous.

1. **Sicyos.** Corolla of the sterile flowers flat and spreading, 5-lobed. Fruit indehiscent.

†† Ovary 2-3-celled. Seeds few, erect or ascending.

2. **Echinocystis.** Corolla of the sterile flowers flat and spreading, 6-parted. Anthers 3. Fruit bladdery, 2-celled, 4-seeded, bursting at the top.

1. SICYOS, L. ONE-SEEDED BUR-CUCUMBER.

Flowers monœcious. Petals 5, united below into a bell-shaped or flattish corolla. Anthers cohering in a mass. Ovary 1-celled, with a single suspended ovule; style slender; stigmas 3. Fruit ovate, dry and indehiscent, filled by the single seed, covered with barbed prickly bristles which are readily detached.—Climbing annuals, with 3-forked tendrils, and small whitish flowers; the sterile and fertile mostly from the same axils, the former corymbed, the latter in a capitate cluster, long-peduncled. (Greek name for the Cucumber.)

1. **S. angulatus, L.** Leaves roundish heart-shaped, 5-angled or lobed, the lobes pointed; plant clammy-hairy.—River banks, and a weed in damp yards, N.H. and Quebec to Ont., west to Minn., E. Kan., and Tex. July–Sept.

2. ECHINOCYSTIS, Torr. and Gray. WILD BALSAM-APPLE.

Flowers monœcious. Petals 6, lanceolate, united at the base into an open spreading corolla. Anthers more or less united. Ovary 2-celled, with 2 erect ovules in each cell; stigma broad. Fruit fleshy, at length dry, clothed with weak prickles, bursting at the summit, 2-celled, 4-seeded, the inner part fibrous-netted. Seeds large, flat, with a thickish hard and roughened coat.—Tall climbing annual, nearly smooth, with 3-forked tendrils, thin leaves, and very numerous small greenish-white flowers; the sterile in compound racemes often 1° long, the fertile in small clusters or solitary, from the same axils. (Name composed of *ἐχινος*, a hedgehog, and *κύστις*, a bladder, from the prickly fruit.)

1. **E. lobata, Torr. and Gray.** Leaves deeply and sharply 5-lobed; fruit oval (2' long); seeds dark-colored.—Rich soil along rivers, N.S. westward. Also cult. for arbors. July–Oct.

ORDER 33. UMBELLIFERÆ (PARSLEY FAMILY).

Herbs, with small flowers in umbels (or rarely in heads), the calyx entirely adhering to the 2-celled and 2-ovuled ovary, the 5 petals and 5 stamens inserted on the disk that crowns the ovary and surrounds the base of the 2 styles. Fruit consisting of 2 seed-like dry carpels. Limb of the calyx obsolete, or a mere 5-toothed border. Petals either imbricated in the bud or valvate with the point inflexed. The two carpels (called mericarps) cohering by their inner face (the commissure), when ripe separating from each other and usually suspended from the summit of a slender prolongation of the axis (carpophore); each carpel marked lengthwise with 5 primary ribs, and often with 4 intermediate (secondary) ones; in the interstices or intervals between them are commonly lodged the oil tubes (vitæ), which are longitudinal canals in the substance of the fruit, containing aromatic oil. (These are best seen in slices made across the fruit.) Seed suspended from the summit of the cell, anatropous, with a minute embryo in hard albumen.—Stems usually hollow. Leaves alternate, mostly compound, the petioles expanded or sheathing at base; rarely with true stipules. Umbels usually compound, in which case the secondary ones are termed umbellets; the whorl of bracts which often subtends the general umbel is the involucre, and those of the umbellets the involuclcs. The base of the styles is frequently thickened and cushion-like, and called the stylopodium. In many the flowers are dichogamous, i.e., the styles are protruded from the bud some time before the anthers develop,—an arrangement for cross-fertilization.—A large family, some of the plants innocent and aromatic, others with very poisonous (acrid-narcotic) properties. The flowers are much alike in all, and the fruits, inflorescence, etc., likewise exhibit comparatively small diversity. The family is consequently difficult for the young student.

I. Fruit with the secondary ribs the most prominent, winged and armed with barbed or hooked prickles, the primary ribs filiform and bristly.

1. **Daucus.** Calyx-teeth obsolete. Fruit flattened dorsally. Seed-face flat.

II. Fruit with primary ribs only (hence but 3 dorsal ones on each carpel).

- * Fruit strongly flattened dorsally, with the lateral ribs prominently winged.
 - † Caulescent branching plants, with white flowers.
 - ‡ Lateral wings closely contiguous; oil-tubes solitary; stylopodium thick-conical.
- 2. **Heracleum.** Dorsal ribs filiform, the broad wings with a marginal nerve. Oil-tubes obclavate. Petals conspicuous. Tall stout perennials, with large leaves.
 - †† Caulescent branching plants, with depressed stylopodium and yellow flowers.
- 3. **Pastinaca.** Fruit with filiform dorsal ribs, thin wings, and solitary oil-tubes.
 - ** Fruit not flattened either way or but slightly, neither prickly nor scaly.
 - † Ribs all conspicuously winged; stylopodium depressed or wanting.
- 4. **Thaspium.** Tall perennials, with ternately divided or simple leaves, and yellow flowers (rarely purple). Oil-tubes solitary.
 - *** Fruit flattened laterally.
 - † Carpels terete or slightly flattened laterally; flowers white.
 - ‡ Seed-face flat; fruit short.
- || Leaves once pinnate; stylopodium depressed; oil-tubes numerous. Aquatic perennials.
- 5. **Sium.** Fruit ovate to oblong; ribs prominent, corky, nearly equal.
 - || || Leaves decomposed. Oil-tubes solitary. Perennials.
- 6. **Cicuta.** Ribs flattish, corky, the lateral largest. Marsh perennials, with serrate leaflets, the veins often running to the notches.
 - ‡† Seed-face concave; fruit ovate, glabrous, with depressed stylopodium, and no oil-tubes.
- 7. **Conium.** An introduced biennial, with spotted stems, and large decomposed leaves.
 - ‡†† Seed-face concave. Fruit linear-oblong, with conical stylopodium.
- 8. **Osmorrhiza.** Fruit bristly, with oil-tubes obsolete.
 - †† Carpels (as well as fruit) strongly flattened laterally.
 - ‡ Seed straight, not sulcate; umbels simple.
- 9. **Hydrocotyle.** Fruit more or less orbicular, with no oil-tubes. Low perennials, in or near water, with creeping stems, and peltate or reniform leaves.
 - **** Fruit obovoid or globose, densely prickly or scaly.
- 10. **Sanicula.** Flowers in irregularly compound few-rayed umbels, yellow. Leaves palmate.

1. DAUCUS, Tourn. CARROT.

Calyx-teeth obsolete. Fruit oblong, flattened dorsally; stylopodium depressed; carpel with 5 slender bristly primary ribs and 4 winged secondary ones, each of the latter bearing a single row of barbed prickles; oil-tubes solitary under the secondary ribs, two on the commissural side; seed-face somewhat concave or almost flat.—Bristly annuals or biennials, with pinnately decomposed leaves,

foliaceous and cleft involueral bracts, and white flowers in compound umbels which become strongly concave. (The ancient Greek name.)

1. *D. Carota*, L. Biennial; stem bristly; ultimate leaf-segments lanceolate and cuspidate; rays numerous.—Naturalized everywhere, from Eu.

2. *HERACLEUM*, L. COW-PARSNIP.

Calyx-teeth minute. Fruit broadly oval or obovate, like *Pastinaca*, but with a thick conical stylopodium, and the conspicuous obclavate oil-tubes extending scarcely below the middle.—Tall stout perennial, with large ternately compound leaves, broad umbels, deciduous involucre, and many-leaved involuclals, white flowers, and obcordate petals, the outer ones commonly larger and 2-cleft. (Dedicated to *Hercules*.)

1. *H. lanatum*, Michx. Woolly; stem grooved, 4–8° high; leaflets broad, irregularly cut-toothed.—Wet ground, Newf. to the Pacific, and southward to N.C., Ky., and Kan. June.

3. *PASTINACA*, L. PARSNIP.

Calyx-teeth obsolete. Fruit oval, very much flattened dorsally; dorsal ribs filiform, the lateral extended into broad wings, which are strongly nerved toward the outer margin; oil-tubes small, solitary in the intervals, 2–4 on the commissure; stylopodium depressed.—Tall stout glabrous biennial, with pinnately compound leaves, mostly no involucre or involuclals, and yellow flowers. (The Latin name, from *pastus*, food.)

1. *P. sativa*, L. Stem grooved; leaflets ovate to oblong, cut-toothed.—Introduced everywhere. (Adv. from Eu.)

4. *THASPIUM*, Nutt. MEADOW-PARSNIP.

Calyx-teeth conspicuous. Fruit ovoid to oblong, slightly flattened dorsally; carpel with 3 or 4 or all the ribs strongly winged; oil-tubes solitary in the intervals, 2 on the commissure. Stylopodium wanting; styles long.—Perennials (2–5° high), with ternately divided leaves (or the lower simple) and broad serrate or toothed leaflets, mostly yellow flowers, and all the fruit pedicelled. (Name a play upon *Thapsia*, so called from the island of Thapsus.)

1. *T. aureum*, Nutt. *Glabrous; root-leaves mostly cordate serrate; stem-leaves simply ternate (rarely biternate); leaflets ovate to lanceolate, round or tapering at base, serrate; flowers deep yellow; fruit globose-ovoid, about 2" long, all the ribs equally winged.*—Thickets and woodlands, N.B. to Ont. Fl. in summer and maturing fruit in late summer or autumn. Very variable.

5. SIUM, Tourn. WATER PARSNIP.

Calyx-teeth minute. Fruit ovate to oblong, glabrous, with prominent corky nearly equal ribs; oil-tubes 1-3 in the intervals; stylopodium depressed; seed-face plane.—Smooth perennials, growing in water or wet places, with pinnate leaves and serrate or pinnatifid leaflets, involucre and involucels of numerous narrow bracts, and white flowers. (From *σίον*, the Greek name of some marsh plant.)

1. *S. cicutæfolium*, Gmelin. *Stout, 2-6° high; leaflets 3-8 pairs, linear to lanceolate, sharply serrate and mostly acuminate, 2-5' long (lower leaves sometimes submersed and finely dissected, as in the next); fruit 1½" long, with prominent ribs. (S. lineare, Michx.)*—Throughout N. America.

6. CICUTA, L. WATER-HEMLOCK.

Calyx-teeth prominent. Fruit oblong to nearly orbicular, glabrous, with strong flattish corky ribs (the lateral largest); oil-tubes conspicuous, solitary; stylopodium depressed; seed nearly terete.—Smooth marsh perennials, very poisonous, with pinnately compound leaves and serrate leaflets, involucre usually none, involucels of several slender bractlets, and white flowers. (The ancient Latin name of the Hemlock.)

1. *C. maculata*, L. SPOTTED COWBANE. MUSQUASH ROOT. BEAVER-POISON. *Stem stout, 2-6° high, streaked with purple; leaves 2-3 pinnate, the lower on long petioles; leaflets lanceolate to oblong-lanceolate (1-5' long), acuminate, coarsely serrate, the veins passing to the notches; pedicels in the umbellets numerous, very unequal; fruit broadly ovate to oval, 1-1½" long.*—Throughout Canada. August.

2. *C. bulbifera*, L. *Rather slender, 1-3° high; leaves 2-3-pinnate (sometimes appearing ternate); leaflets linear, sparsely toothed*

(1-2' long); *upper axils bearing clustered bulblets*; fruit (rare) scarcely 1" long.—Common in swamps, N. Scotia, westward.

7. CONIUM, L. POISON HEMLOCK.

Calyx-teeth obsolete. Fruit ovate, somewhat flattened at the sides, glabrous, with prominent wavy ribs; oil-tubes none, but a layer of secreting cells next the seed, whose face is deeply and narrowly concave.—Poisonous biennial, with spotted stems, large decompound leaves with lanceolate pinnatifid leaflets, involucre and involucels of narrow bracts, and white flowers. (*Κόνηλον*, the Greek name of the Hemlock, by which criminals and philosophers were put to death at Athens.)

1. *C. maculatum*, L. A large branching European herb, in waste places, Q. to Ont.

8. OSMORRHIZA, Raf. SWEET CICELY.

Calyx-teeth obsolete. Fruit linear to linear-oblong, with prominent caudate attenuation at base, very bristly, with equal ribs; oil-tubes obsolete; seed-face concave.—Glabrous to hirsute perennials (1-3° high) from thick aromatic roots, with ternately compound leaves, ovate variously toothed leaflets, few-leaved involucre and involucels, and white flowers in few-rayed and few-fruited umbels. (Name from *ὀσμή*, a scent, and *ρίζα*, a root.)

1. *O. brevistylis*, DC. Rather stout, *villous-pubescent*; leaves 2-3-ternate; leaflets 2-3' long, acuminate; fruit (not including the caudate attenuation) 6" long; *stylopodium* and style $\frac{1}{2}$ " long.—From N. Scotia westward to the R. Mts. May, June.

2. *O. longistylis*, DC. *Glabrous or slightly pubescent*; like the last, but with the style 1" long or more, and the seed-face more deeply and broadly concave.—N. Scotia, westward.

9. HYDROCOTYLE, Tourn. WATER PENNYWORT.

Calyx-teeth obsolete. Fruit strongly flattened laterally, orbicular or shield-shaped; the carpels 5-ribbed, two of the ribs enlarged and often forming a thickened margin; oil-tubes none, but usually a conspicuous oil-bearing layer beneath the epidermis.—Low, mostly smooth, marsh or aquatic perennials, with slender creeping stems, and round shield-shaped or kidney-form leaves, with scale-like

stipules. Flowers small, white, in simple umbels or clusters, which are either single or proliferous (one above another), appearing all summer. (Name from *ὕδωρ*, *water*, and *κορίαν*, *a flat cup*, the peltate leaves of several species being somewhat cup-shaped.)

* *Pericarp uniformly corky-thickened and ribs all filiform; leaves not peltate; peduncles much shorter than the petioles.*

† *Fruit small, without secondary ribs or reticulations; involucre small or none.*

1. **H. Americana**, L. Stems filiform, branching and creeping; leaves thin, round-reniform, crenate-lobed and the lobes crenate, shining; few-flowered umbels axillary and almost sessile; fruit less than 1" broad; intermediate ribs prominent; no oil-bearing layer; seed-section broadly oval.—Common, N. S. to Ont.

10. **SANICULA**, Tourn. SANICLE. BLACK SNAKEROOT.

Calyx-teeth manifest, persistent. Fruit globular; the carpels not separating spontaneously, ribless, thickly clothed with hooked prickles, each with 5 oil-tubes.—Perennial rather tall glabrous herbs, with few palmately-lobed or parted leaves, those from the root long-petioled. Umbels irregular or compound, the flowers (greenish or yellowish) capitate in the umbellets, perfect, and with staminate ones intermixed. Involucre and involucels few-leaved. (Name said to be from *sano*, to heal; or perhaps from *San Nicolas*.)

1. **S. Marylandica**, L. Stem 1-3° high; leaves 3-7-parted, the divisions most sharply cut and serrate; sterile flowers numerous and long-pedicelled; fruit 1½-2" long, the styles longer than the prickles.

Var. **Canadensis**, Torr., has comparatively few and short-pedicelled sterile flowers, and styles shorter than the prickles. (*S. Canadensis*, L.)—With the last, but westward only, Ont.

ORDER 34. **ARALIACEÆ** (GINSENG FAMILY).

Herbs, shrubs, or trees, with much the same characters as Umbelliferae, but with usually more than 2 styles, and the fruit a few-several-celled drupe.—Albumen mostly fleshy. Petals not inflexed.

1. **ARALIA**, Tourn. GINSENG. WILD SARSAPARILLA.

Flowers more or less polygamous. Calyx-tube coherent with the ovary, the teeth very short or almost obsolete. Petals 5 epigynous,

oblong or obovate, lightly imbricated in the bud, deciduous. Stamens 5, epigynous, alternate with the petals. Styles 2-5, mostly distinct and slender, or in the sterile flowers short and united. Ovary 2-5-celled, with a single anatropous ovule suspended from the top of each cell, ripening into a berry-like drupe, with as many seeds as cells. Embryo minute.—Leaves compound or decom-pound. Flowers white or greenish, in umbels. Roots (perennial), bark, fruit, etc., warm and aromatic. (Derivation obscure)

§1. *ARALIA*. *Flowers monœciously polygamous or perfect, the umbels usually in corymbs or panicles; styles and cells of the (black or dark purple) fruit 5; stems herbaceous or woody; ultimate divisions of the leaves pinnate.*

* *Umbels numerous in a large compound panicle; leaves very large, decom-pound.*

1. *A. racemosa*, L. SPIKENARD. *Herbaceous; stem widely branched; leaflets heart-ovate, pointed, doubly serrate, slightly downy; umbels racemose; styles united.*—Rich woodlands, N. S. to Ont., south to the mountains of Ga. July. Well known for its spicy-aromatic large roots.

** *Umbels 2-7, corymbed; stem short, somewhat woody.*

2. *A. hispida*, Vent. BRISTLY SARSAPARILLA. WILD ELDER. *Stem (1-2° high) bristly, leafy, terminating in a peduncle bearing several umbels; leaves twice pinnate; leaflets oblong-ovate, acute, cut-serrate.*—Rocky and sandy places, Newf. to Ont. and the Dakotas, south to the mountains of N. C. June.

3. *A. nudicaulis*, L. WILD SARSAPARILLA. *Stem scarcely rising out of the ground, smooth, bearing a single long-stalked leaf (1° high) and a shorter naked scape, with 2-7 umbels; leaflets oblong-ovate or oval, pointed, serrate, 5 on each of the 3 divisions.*—Moist woodlands; Atl. to R. Mts. May, June. The long horizontal aromatic roots a substitute for officinal Sarsaparilla.

§2. *GINSENG*. *Flowers dioeciously polygamous; styles and cells of the red or reddish fruit 2 or 3; stem herbaceous, low, simple, bearing a whorl of 3 palmately 3-7-foliolate leaves, and a simple umbel on a slender peduncle.*

4. **A. quinquefolia**, Decsne. and Planch. GINSENG. *Root large and spindle-shaped, often forked (4-9' long, aromatic); stem 1° high; leaflets long-stalked, mostly 5, large and thin, obovate-oblong, pointed; styles mostly 2; fruit bright red.*—Rich and cool woods, Q. and Ont., south to the mountains of Ga. July.

ORDER 35. CORNACEÆ (DOGWOOD FAMILY).

Shrubs or trees (rarely herbaceous), with opposite or alternate simple leaves, the calyx-tube coherent with the 1-2-celled ovary, its limb minute, the petals (valvate in the bud) and as many stamens borne on the margin of an epigynous disk in the perfect flowers; style one; a single anatropous ovule hanging from the top of the cell; the fruit a 1-2-seeded drupe; embryo nearly as long as the albumen, with large foliaceous cotyledons.—Including two genera, of which *Nyssa* is partly apetalous. Bark bitter and tonic.

1. **Cornus**. Flowers perfect, 4-merous. Leaves mostly opposite.

1. CORNUS, Tourn. CORNEL. DOGWOOD.

Flowers perfect (or in some foreign species dioecious). Calyx minutely 4-toothed. Petals 4, oblong, spreading. Stamens 4; filaments slender. Style slender; stigma terminal, flat or capitate. Drupe small, with a 2-celled and 2-seeded stone.—Leaves opposite (except in one species), entire. Flowers small, in open naked cymes, or in close heads surrounded by a corolla-like involucre. (Name from *cornu*, a horn; alluding to the hardness of the wood.)

§ 1. *Flowers greenish, in a head or close cluster, surrounded by a large and showy, 4-leaved, corolla-like, white or rarely pinkish involucre; fruit bright red.*

1. **C. Canadensis**, L. DWARF CORNEL. BUNCH-BERRY. *Stems low and simple (5-7' high) from a slender creeping and subterranean rather woody trunk; leaves scarcely petioled, the lower scale-like, the upper crowded into an apparent whorl in sixes or fours, ovate or oval, pointed; leaves of the involucre ovate; fruit globular.*—Damp cold woods, Atlantic to the Pacific, and the far north. June.

§ 2. *Flowers white, in open flat spreading cymes; involucre none; fruit spherical; leaves all opposite (except in n. 5).*

* Pubescence woolly and more or less spreading.

2. *C. circinata*, L'Her. ROUND-LEAVED CORNEL or DOGWOOD. Shrub 6-10° high; branches greenish, warty-dotted; leaves round-oval, abruptly pointed, woolly beneath (2-5' broad); cymes flat; fruit light blue.—Copses, in rich or sandy soil, or on rocks, N. S. to Ont. June.

3. *C. sericea*, L. SILKY CORNEL. KINNIKINNIK. Shrub 3-10° high; branches purplish; the branchlets, stalks, and lower surface of the narrowly ovate or elliptical pointed leaves silky-downy (often rusty), pale and dull; cymes flat, close; calyx-teeth lanceolate; fruit pale blue.—Wet places, N. B. to Ont. June.

* * Pubescence closely appressed, straight and silky, or none.

4. *C. stolonifera*, Michx. RED-OSIER DOGWOOD. Branches, especially the osier-like shoots of the season, bright red-purple, smooth; leaves ovate, rounded at base, abruptly short-pointed, roughish with a minute close pubescence on both sides, whitish underneath; cymes small and flat, rather few-flowered, smooth; fruit white or lead-color.—Wet places; common, Atlantic to the Pacific, northward. Multiplies freely by prostrate or subterranean suckers, and forms broad clumps, 3-6° high. June.

5. *C. alternifolia*, L. f. Shrub or tree 8-25° high; branches greenish streaked with white, the alternate leaves clustered at the ends, ovate or oval, long-pointed, acute at base, whitish and minutely pubescent beneath; cymes very broad and open; fruit deep blue on reddish stalks.—Hillsides in copses, N. S., Q., and Ont. May, June.

DIVISION II. GAMOPETALÆ.

Floral envelopes consisting of both calyx and corolla, the latter composed of more or less united petals, that is, gamopetalous.

ORDER 36. CAPRIFOLIACEÆ (HONEYSUCKLE FAMILY).

Shrubs, or rarely herbs, with opposite leaves, no (genuine) stipules, the calyx-tube coherent with the 2-5-celled ovary, the stamens as many as (one fewer in *Linnaea*, doubled in *Adoxa*) the lobes of the tubular or rotate corolla, and inserted on its tube.—Fruit a berry, drupe, or pod, 1-several-seeded. Seeds anatropous, with small embryo in fleshy albumen.

Tribe I. SAMBUCEÆ. Corolla wheel-shaped or urn-shaped, regular, deeply 5 lobed. Stigmas 3-5, sessile or nearly so. Inflorescence terminal and cymose.

* Shrubs, with stamens as many as corolla-lobes and flowers in broad compound cymes.

1. **Sambucus.** Fruit berry-like, containing three small seed-like nutlets. Leaves pinnate.

2. **Viburnum.** Fruit a 1-celled 1-seeded drupe, with a compressed stone. Leaves simple.

Tribe II. LONICEREÆ. Corolla tubular, often irregular, sometimes 2-lipped. Style slender; stigma capitate.

* Herbs, with axillary flowers.

3. **Linnaea.** Stamens 4, one fewer than the lobes of the corolla. Fruit dry, 3-celled, but only 1-seeded. Creeping, with long-pedunculate twin flowers.

* * Erect or climbing shrubs, with scaly winter-buds.

4. **Diervilla.** Stamens 5. Corolla funnel-form, nearly regular. Pod 2-celled, 2-valved, many-seeded, slender.

1. SAMBUCUS, Tourn. ELDER.

Calyx-lobes minute or obsolete. Corolla open urn-shaped, with a broadly spreading 5-cleft limb. Stamens 5. Stigmas 3. Fruit a berry-like juicy drupe, containing 3 small seed-like nutlets.—Shrubby plants, with a rank smell when bruised, pinnate leaves, serrate-pointed leaflets, and numerous small and white flowers in compound cymes. (The Latin name, perhaps from *σαμβίκη*, an ancient musical instrument.)

1. **S. Canadensis, L.** COMMON ELDER. Stems scarcely woody (5-10° high); leaflets 5-11, oblong, mostly smooth, the lower often 3-parted; cymes flat; fruit black-purple. —Rich soil, in open places, N.S., westward. June, July.—Pith white.

2. **S. racemosa, L.** RED-BERRIED ELDER. Stems woody (2-12° high), the bark warty; leaflets 5-7, ovate-lanceolate, downy underneath; cymes panicle, convex or pyramidal; fruit bright red (rarely white). (*S. pubens, Michx.*)—Rocky woods, N.S., westward across the continent. May; the fruit ripening in June.—Pith brown. Both species occur with the leaflets divided into 3-5 linear-lanceolate 2-3-cleft or lacinate segments.

2. VIBURNUM, L. ARROW-WOOD. LAURESTINUS.

Calyx 5-toothed. Corolla spreading, deeply 5-lobed. Stamens 5. Stigmas 1-3. Fruit a 1-celled, 1-seeded drupe, with soft pulp and a thin-crustaceous (flattened or tumid) stone.—Shrubs, with simple

leaves, and white flowers in flat compound cymes. Petioles sometimes bearing little appendages which are evidently stipules. Leaf-buds naked, or with a pair of scales. (The classical Latin name, of unknown meaning.)

§ 1. *Cyme radiant, the marginal flowers neutral, with greatly enlarged flat corollas as in Hydrangea; drupes coral-red turning darker, not acid; stone sulcate; leaves pinnately veined; winter-buds naked.*

1. **V. lantanoides**, Michx. **HOBBLE-BUSH. AMERICAN WAY-FARING-TREE.** Leaves (4-8' across) round-ovate, abruptly pointed, heart-shaped at the base, closely serrate, the veins and veinlets beneath with the stalks and branchlets very rusty-scuffy; cymes sessile, very broad and flat.—Cold moist woods, N.B. to Ont. May. A straggling shrub; the reclining branches often taking root.

§ 2. *Cyme peduncled, radiant in n. 2; drupe light red, acid, globose; stone very flat, orbicular, not sulcate; leaves palmately veined; winter-buds scaly.*

2. **V. Opulus**, L. **CRANBERRY-TREE.** Newly smooth, upright (4-10' high); leaves 3-5-ribbed, strongly 3-lobed, broadly wedge-shaped or truncate at base, the spreading lobes pointed, mostly toothed on the sides, entire in the sinuses; petioles bearing 2 glands at the apex.—Low ground, along streams, from Anticosti and N.B. far westward. June, July.—The acid fruit is a substitute for cranberries, whence the names *High Cranberry-bush*, etc. The well-known **SNOW-BALL TREE**, or **GUELDER ROSE**, is a cultivated state, with the whole cyme turned into showy sterile flowers. (Eu.)

3. **V. pauciflorum**, Pylaie. A low straggling shrub; leaves glabrous or loosely pubescent beneath, 5-ribbed at base, unequally serrate nearly all round, with 3 short lobes at the summit; cyme few-flowered; stamens shorter than the corolla.—Cold woods, Newf. and Lab., westward to the Rocky Mts.

§ 3. *Cyme never radiant; drupes blue, or dark-purple or black at maturity.*

* *Leaves 3-ribbed from the rounded or subcordate base, somewhat 3-lobed; stipules bristle-shaped.*

4. **V. acerifolium**, L. DOCKMACKIE. ARROW-WOOD. Shrub 3-6° high; leaves soft-downy beneath, the pointed lobes diverging, unequally toothed; cymes small, slender-peduncled; stamens exserted; fruit crimson turning purple; stone lenticular, hardly sulcate.—Cool rocky woods, from N. Brunswick westward.

*** Leaves (with base inclined to heart-shaped) coarsely toothed, prominently pinnately veined; stipules narrowly subulate; no rusty scurf; fruit ovoid, blue or purple; the stone grooved; cymes peduncled.*

† Stone flat; leaves all short-petioled or subsessile.

5. **V. pubescens**, Pursh. DOWNY A. A low, straggling shrub; leaves ovate or oblong-ovate, acute or taper-pointed, the veins and teeth fewer and less conspicuous than in the next, the lower surface and very short petioles soft-downy, at least when young; fruit dark-purple; the stone lightly 2-sulcate on the faces.—Rocks, etc., Q. to Man. June.

†† Stone very deeply sulcate ventrally; leaves rather slender-petioled.

6. **V. dentatum**, L. ARROW-WOOD. Smooth, 5-15° high, with ash-colored bark; leaves broadly ovate, very numerous sharp-toothed and strongly veined; fruit 3" long; cross-section of stone between kidney- and horseshoe-shaped.—Wet places, N. Brunswick to Ont. June.—The pale leaves often with hairy tufts in the axils of the straight veins.

**** Leaves finely serrate or entire, bright green; veins not prominent; stipules none; whole plant glabrous or with some minute rusty scurf; fruit black or with a blue bloom, sweet; stone very flat and even, broadly oval or orbicular.*

† Cymes peduncled, about 5-rayed; drupes globose-ovoid, 3" long; shrubs 5-12° high, in swamps.

7. **V. cassinoides**, L. WITHE-ROD. Shoots scurfy-punctate; leaves thickish and opaque or dull, ovate to oblong, mostly with obtuse acumination, obscurely veiny (1-3' long), with margins irregularly crenulate-denticulate or sometimes entire; peduncle shorter than the cyme. (*V. nudum*, var. *cassinoides*, Torr. and Gray.)—Newf. westward. Flowers earlier than the next.

†† Compound cyme sessile, 3-5 rayed; drupes oval, 5-7" long.

8. **V. Lentago**, L. SWEET VIBURNUM. SHEEP-BERRY. *Leaves ovate, strongly pointed, closely and very sharply serrate; petioles long and margined; cyme large; fruit oval, $\frac{1}{2}$ ' long or more, ripe in autumn, edible; tree 15-30° high.*—Woods and banks of streams, from the Atlantic westward and northward. Fl. in spring.

3. **LINNÆA**, Gronov. TWIN-FLOWER.

Calyx-teeth 5, awl-shaped, deciduous. Corolla narrow bell-shaped, almost equally 5-lobed. Stamens 4, two of them shorter, inserted toward the base of the corolla. Ovary and the small dry pod 3-celled, but only 1-seeded, two of the cells having only abortive ovules.—A slender creeping and trailing little evergreen, somewhat hairy, with rounded-oval sparingly crenate leaves contracted at the base into short petioles, and thread-like upright peduncles forking into 2 pedicels at the top, each bearing a delicate and fragrant nodding flower. Corolla purple and whitish, hairy inside. (Dedicated to the immortal *Linnaeus*, who first pointed out its characters, and with whom this pretty little plant was a special favorite.)

1. **L. borealis**, Linnaeus.—Moist mossy woods and cold bogs, from Atlantic to Pacific. June. (Eu.)

4. **DIERVILLA**, Tourn. BUSH-HONEYSUCKLE.

Calyx-tube tapering at the summit; the lobes slender, awl-shaped, persistent. Corolla funnel-form, 5-lobed, almost regular. Stamens 5. Pod ovoid-oblong, pointed, 2-celled, 2-valved, septidial, many-seeded.—Low upright shrubs, with ovate or oblong pointed serrate leaves, and cymosely 3-several-flowered peduncles, from the upper axils or terminal. (Named in compliment to *Dr. Dierville*, who brought it from Canada to Tournefort.)

1. **D. trifida**, Moench. Leaves oblong-ovate, taper-pointed, petioled; peduncles mostly 3-flowered; pod long-beaked.—Rocks, Anticosti westward. June-Aug.—Flowers honey-color, not showy, as are the Japanese species cultivated under the name of *WEIGELA*.

ORDER 37. **RUBIACEÆ** (MADDER FAMILY).

Shrubs or herbs, with opposite entire leaves connected by interposed stipules, or in whorls without apparent stipules, the calyx coherent with the 2-4-celled ovary, the stamens as many as the lobes of the

regular corolla (4-5), and inserted on its tube.—Flowers perfect, but often dimorphous (as in *Mitchella* and *Houstonia*). Fruit various. Seeds anatropous or amphitropous. Embryo commonly pretty large, in copious hard albumen.—A very large family, the greater part, and all its most important plants (such as the Coffee and Peruvian-Bark trees), tropical.

I. CINCHONEÆ. Ovules numerous in each cell ; leaves opposite.

1. **Houstonia.** Corolla salver-form or funnel-form, 4-lobed. Seeds rather few, thimble-shaped or saucer-shaped. Low herbs.

II. COFFEINEÆ. Ovules solitary in the cells ; leaves mostly opposite.

† Flowers in a close and globose long-peduncled head. Fruit dry. Shrubs.

2. **Cephalanthus.** Corolla tubular ; lobes 4. Fruit inversely pyramidal, 2-4-seeded.

†† Flowers twin ; their ovaries united into one. Fruit a 2-eyed berry.

3. **Mitchella.** Corolla funnel-form ; its lobes 4. A creeping herb.

1. HOUSTONIA, L.

Calyx 4-lobed, persistent ; the lobes in fruit distant. Corolla salver-form or funnel-form, usually much longer than the calyx-lobes, 4-lobed, the lobes valvate in the bud. Stamens 4 ; anthers linear or oblong. Style 1 ; stigmas 2. Ovary 2-celled. Pod top-shaped, globular, or didymous, thin, its summit or upper half free from and projecting beyond the tube of the calyx, loculicidal across the top. Seeds rather few (4-20 in each cell), peltate and saucer-shaped or globular-thimble-shaped, pitted.—Small herbs, with short entire stipules connecting the petioles or narrowed bases of the leaves, and cymose or solitary and peduncled flowers. These are dimorphous, in some individuals with exserted anthers and short included style ; in others the anthers included and the style long, the stigmas therefore protruding. (Named for *Dr. Wm. Houston*, an English botanist, who collected in Central America.)

* *Small and delicate, vernal-flowering ; peduncles 1-flowered ; corolla salver-form ; upper half of the broad and somewhat 2-lobed pod free ; seeds globular, with a very deep round cavity occupying the inner face.*

† *Perennial by delicate filiform creeping rootstocks or creeping stems ; peduncles filiform, 1-2' long.*

1. *H. cœrulea*, L. **BLUETS. INNOCENCE.** Glabrous; *stems erect*, slender, sparingly branched from the base (3-5' high); *leaves oblong-spatulate* (3-4" long); peduncle filiform, erect; corolla *light blue*, pale lilac or nearly white with a yellowish eye, with tube much longer than its lobes or than those of the calyx.—Moist and grassy places, N.S. westward; producing from early spring to midsummer its delicate little flowers.

2. *CEPHALANTHUS*, L. **BUTTON-BUSH.**

Calyx-tube inversely pyramidal, the limb 4-toothed. Corolla tubular, 4-toothed; the teeth imbricated in the bud. Style thread-form, much protruded. Stigma capitate. Fruit dry and hard, small, inversely pyramidal, 2-4-celled, at length splitting from the base upward into 2-4 closed 1-seeded portions.—Shrubs, with the white flowers densely aggregated in spherical peduncled heads. (Name composed of *κεφαλή*, a head, and *άνθος*, a flower.)

1. *C. occidentalis*, L. Smooth or pubescent; leaves petioled, ovate or lanceolate-oblong, pointed, opposite or whorled in threes, with short intervening stipules.—Swamps and along streams, Q. and Ont. July, Aug.

3. *MITCHELLA*, L. **PARTRIDGE-BERRY.**

Flowers in pairs, with their ovaries united. Calyx 4-toothed. Corolla funnel-form, 4-lobed; the lobes spreading, densely bearded inside, valvate in the bud. Stamens 4. Style 1; stigmas 4, linear. Fruit a berry-like double drupe, crowned with the calyx-teeth of the two flowers, with 4 small seed-like bony nutlets to each flower.—A smooth and trailing small evergreen herb, with round-ovate and shining petioled leaves, minute stipules, white fragrant flowers often tinged with purple, and scarlet edible (but nearly tasteless) berries, which remain over winter. Flowers occasionally 3-6-merous, always dimorphous; all those of some individuals having exserted stamens and included stigmas; of others, included stamens and exserted style. (This very pretty plant commemorates *Dr. John Mitchell*, an early correspondent of Linnæus, and an excellent botanist, who resided in Virginia.)

1. *M. repens*, L.—Dry woods, creeping about the foot of trees, especially Coniferæ, throughout our range and southward. June,

July.—Leaves often variegated with whitish lines. Rarely the two flowers are completely confluent into one, with a 10-lobed corolla.

ORDER 38. **COMPOSITÆ** (COMPOSITE FAMILY).

Flowers in a close head (the compound flower of the older botanists), *on a common receptacle, surrounded by an involucre, with 5 (rarely 4) stamens inserted on the corolla, their anthers united in a tube (syngenesious).*—Calyx-tube united with the 1-celled ovary, the limb (called a *pappus*) crowning its summit in the form of bristles, awns, scales, teeth, etc., or cup-shaped, or else entirely absent. Corolla either strap-shaped or tubular; in the latter chiefly 5-lobed, valvate in the bud, the veins bordering the margins of the lobes. Style 2-cleft at the apex (in sterile flowers usually entire). Fruit seed-like (*achene*), dry, containing a single erect anatropous seed, with no albumen. — An immense family, in temperate regions chiefly herbs, without stipules, with perfect, polygamous, monœcious or dioecious flowers. The flowers with a strap-shaped (*ligulate*) corolla are called *rays* or *ray-flowers*; the head which presents such flowers, either throughout or at the margin, is *radiate*. The tubular flowers compose the *disk*; and a head which has no ray-flowers is said to be *discoid*. The leaves of the involucre, of whatever form or texture, are termed *scales*. The bracts or scales, which often grow on the receptacle among the flowers, are called the *chaff*; when these are wanting, the receptacle is said to be *naked*.—The largest order of Phænogamous plants. The genera are divided by the corolla into three series, only two of which are represented in the Northern United States. The first is much the larger.

Systematic Synopsis.

SERIES I. **TUBULIFLORÆ.**

Corolla tubular in all the perfect flowers, regularly 5- (rarely 3-4) lobed, ligulate only in the marginal or ray-flowers, which when present are either pistillate only, or neutral (with neither stamens nor pistil).

Tribe 7. **EUPATORIACEÆ.** Heads discoid, the flowers all alike, perfect and tubular, never yellow. Branches of the style thickened upward or club-shaped, obtuse, very minutely and uniformly pubescent; the stigmatic lines indistinct.

* Pappus of slender bristles.

† Achene 5-angled; bristles of the pappus roughish.

1. **Eupatorium.** Involucre of more than 4 scales and the flowers few or many. Stems not twining.

Tribe II. ASTEROIDEÆ. Heads discoid, the flowers all alike and tubular; or else radiate, the outer ones ligulate and pistillate. Anthers not caudate at base. Branches of the style in the perfect flowers flat, smooth up to where the conspicuous marginal stigmatic lines abruptly terminate, and prolonged above this into a flattened lance-shaped or triangular appendage which is evenly hairy or pubescent outside.—Leaves alternate. Receptacle naked (destitute of chaff) in all our species.

- *1. Ray-flowers yellow (in one species of *Solidago* whitish), or sometimes none at all.

† Pappus (at least of the disk) of copious slender or capillary bristles.

‖ Pappus simple.

2. **Solidago.** Heads few-many-flowered; rays 1-16. Pappus of numerous slender and equal capillary bristles.

- * 2. Ray-flowers white, blue, or purple, never yellow.

† Pappus of numerous long and capillary bristles; receptacle flat.

3. **Aster.** Heads many-flowered, on leafy peduncles. Involucral scales unequal, loosely or closely imbricated. Achenes flattish; pappus simple (rarely double), copious.

4. **Erigeron.** Heads many-flowered, on naked peduncles. Involucre of narrow equal scales, little imbricated. Achenes flattened; pappus simple and rather scanty, or with some outer minute scales.

Tribe III. INULOIDEÆ. Heads discoid (radiate only in *Inula*), the pistillate flowers mostly filiform and truncate. Anthers sagittate, the basal lobes attenuate into tails. Style-branches with unappendaged obtuse or truncate naked tips. Pappus capillary or none.

- *1. Receptacle naked. Involucral scales many, scarious. Floccose-woolly herbs.

5. **Antennaria.** Heads diœcious. Pappus of sterile flowers club-shaped, of the fertile united at base and deciduous together.

6. **Anaphalis.** Heads diœcious or nearly so. Pappus not thickened above nor at all united at base.

7. **Gnaphalium.** Heads all fertile throughout. Pappus all capillary.

Tribe IV. HELIANTHOIDEÆ. Heads radiate or discoid. Involucre not scarious (nut-like in fruit in n. 8). Receptacle chaffy. Pappus never capillary, sometimes none. Anthers not caudate. Style-branches truncate or hairy-appendaged.

- *1. Fertile flowers 1-5, the corolla none or reduced to a tube; staminate corolla funnel-form. Pappus none.

† Heads of two sorts on the same plant, the upper staminate with an open cup-shaped involucre, the lower pistillate, of 1-4 flowers in a closed bur-like involucre.

8. **Ambrosia.** Scales of staminate involucre united. Fruit 1-seeded.

- *2. Heads radiate, or rarely discoid; disk-flowers all perfect and fertile. Anthers blackish. Pappus none, or a crown or cup, or of one or two chaffy awns, never capillary, nor of several uniform chaffy scales.—Leaves more commonly opposite.

† Involucre of one or more rows of separate scales.

‡ Chaff scale-like, embracing or subtending the achenes.

|| Receptacle high, conical or columnar in fruit. Pappus none or a short crown.

9. **Rudbeckia.** Rays neutral. Achenes 4-sided, flat at the top, marginless.

|| || Receptacle flat to convex. Achenes not winged nor very flat.

10. **Hellanthus.** Achenes flattened, bearing 2 very deciduous chaffy pointed scales.

* 3. Rays few, neutral, or wanting. Achenes obcompressed, *i.e.*, flattened parallel with the scales of the involucre (rarely terete). Involucre double; the outer spreading and often foliaceous. Receptacle flat. Leaves opposite.

11. **Bidens.** Pappus of 2 or more rigid and persistent downwardly barbed awns or teeth.

Tribe V. ANTHEMIDEÆ. Distinguished from the last two tribes by the more or less dry and scarious imbricated scales of the involucre. Heads radiate (ray mostly white) or discoid, the perfect flowers sometimes sterile and the pistillate rarely tubular. Achenes small; pappus a short crown or none.—Mostly strong-scented; leaves alternate.

* Receptacle chaffy, at least in part. Heads radiate, many-flowered.

12. **Achillea.** Achenes obcompressed. Heads small, campanulate or obovate.

** Receptacle naked.

† Heads rather large, pedunculate, radiate or rarely rayless.

13. **Chrysanthemum.** Receptacle flattish. Rays many, pistillate. Pappus none.

† † Heads mostly small, discoid, corymbd or paniculate.

14. **Tanacetum.** Heads corymbd. Achene with broad summit; pappus a short crown.

Tribe VI. CYNAROIDEÆ. Flowers all tubular and perfect. Involucre much imbricated. Anthers caudate, long-appendaged at tip. Style-branches short or united, obtuse, unappendaged, smooth, with often a pubescent ring below. Pappus mostly bristly.—Leaves alternate.

* Achenes attached by the base. Flowers all alike.

† Leaves prickly. Style-branches coherent, usually a pubescent ring below.

SERIES II. **LIGULIFLORÆ.**

Tribe VII. CICHORIACEÆ. Corolla ligulate in all the flowers of the head, and all the flowers perfect.—Herbs, with milky juice. Leaves alternate.

* Pappus chaffy, or of both chaff and bristles.

15. **Cichorium.** Involucre double. Pappus a small crown of many bristle-form scales.

** Pappus plumose.

16. **Leontodon.** Involucre calyculate. Achenes fusiform. Leaves radical.

*** Pappus composed entirely of capillary bristles, not plumose.

† Achenes not flattened, columnar or terete, often slender.

† Achenes not beaked.

|| Flowers yellow or orange.

17. **Hieracium**. Involucre imbricated. Pappus tawny. Pilose perennials.

†† Achenes beaked. Flowers yellow.

18. **Taraxacum**. Scapose. Involucre calyculate. Achenes 4-5-ribbed.

1. EUPATORIUM, Tourn. THOROUGHWORT.

Heads discoid, 3-many-flowered; flowers perfect. Involucre cylindrical or bell-shaped, of more than 4 scales. Receptacle flat or conical, naked. Corolla 5-toothed. Achenes 5-angled; pappus a single row of slender capillary barely roughish bristles.—Erect perennial herbs, often sprinkled with bitter resinous dots, with generally corymbose heads of white, bluish, or purple blossoms, appearing near the close of summer. (Dedicated to *Eupator Mithridates*, who is said to have used a species of the genus in medicine.)

§ 1. EUPATORIUM proper. Receptacle flat.

* *Heads cylindrical, 5-15-flowered; the purplish scales numerous, closely imbricated in several rows, of unequal length, slightly striate; stout herbs, with ample mostly whorled leaves, and flesh-colored flowers.*

1. **E. purpureum**, L. JOE-PYE WEED. TRUMPET-WEED. Stems tall and stout, simple; leaves 3-6 in a whorl, oblong-ovate or lanceolate, pointed, very veiny, roughish, toothed; corymbs very dense and compound.—Varies greatly in size (2-12° high), etc., and with spotted or unspotted, often dotted stems, etc.,—including several nominal species.—Low grounds; common.

** *Heads 3-20-flowered; involucre of 8-15 more or less imbricated and unequal scales, the outer ones shorter; flowers white.*

† *Leaves sessile or nearly so, with a narrow base, mostly opposite; heads mostly 5-flowered.*

|| *Leaves opposite, clasping or united at the base, long widely spreading; heads mostly 10-15-flowered; corymbs very compound and large.*

2. **E. perfoliatum**, L. THOROUGHWORT. BONESET. Stem stout (2-4° high), hairy; leaves lanceolate, united at the base around the stem (connate-perfoliate), tapering to a slender point, serrate, very veiny, wrinkled, downy beneath (5-8' long); scales of the involucre linear-lanceolate.—Low grounds; common and well-known.—Varies with the heads 30-40-flowered, or with some or all of the leaves separated and truncate at base.

2. **SOLIDAGO**, L. GOLDEN-ROD.

Heads few-many-flowered, radiate; the rays 1-16, pistillate. Scales of the oblong involucre appressed, destitute of herbaceous tips (except n. 1). Receptacle small, not chaffy. Achenes many-ribbed, nearly terete; pappus simple, of equal capillary bristles.—Perennial herbs, with mostly wand-like stems and nearly sessile stem-leaves, never heart-shaped. Heads small, racemed or clustered; flowers both of the disk and ray (except in n. 3) yellow. (Name from *solidus* and *ago*, to join, or make whole, in allusion to reputed vulnery qualities.) Flowering in autumn.

Conspectus of Groups.

Heads all more or less pedicelled.

Involucral scales rigid, with spreading herbaceous tips 1

Involucral scales without green tips.

Heads small, mostly clustered in the axils of feather-veined leaves 2, 3

Heads mostly small or middle-sized; inflorescence paniculate (sometimes thyrsoidal).
Leaves 3-ribbed; heads in 1-sided spreading paniced racemes.

Pubescent or scabrous 12

Leaves not 3-ribbed, or only obscurely triple-nerved.

Heads large; leaves thickish, very smooth, entire. Seashore 6

§ 1. **VIRGAUREA**. *Rays mostly fewer than the disk-flowers; heads all more or less pedicelled.*

* *Scales of the much imbricated and rigid involucre with abruptly spreading herbaceous tips; heads in clusters or glomerate racemes, disposed in a dense somewhat leafy and interrupted wand-like compound spike.*

1. **S. squarrosa**, Muhl. Stem stout (2-5° high), hairy above; leaves large, oblong, or the lower spatulate-oval and tapering into a margined petiole, serrate, veiny; heads numerous; scales obtuse or acute; disk-flowers 16-24, the rays 12-16.—Rocky and wooded hills, N.S. to Ont.

** *Involucral scales without green tips and wholly appressed.*

† *Heads small (3" long), clustered along the stem in the axils of the feather-veined leaves, or the upper forming a thyrs.*

‡ *Achenes pubescent.*

2. *S. latifolia*, L. Smooth or nearly so; stem angled, zigzag, simple or paniculate-branched (1-3° high); leaves broadly ovate or oval, very strongly and sharply serrate, conspicuously pointed at both ends (thin, 3-6' long); heads in very short axillary clusters, or the clusters somewhat prolonged at the end of the branches; rays 3-4. —Moist shaded banks; N.S. to Ont.

†† Achenes glabrous; inflorescence more thyrsoid.

3. *S. bicolor*, L. Hoary or grayish with soft hairs; stem mostly simple; leaves oblong or elliptical-lanceolate, acute at both ends, or the lower oval and tapering into a petiole, slightly serrate; clusters or short racemes from the axils of the upper leaves, forming an interrupted spike or crowded panicle; scales very obtuse; rays (5-14) small, cream-color or nearly white. —Var. *CONCOLOR*, Torr. and Gray, has the rays yellow. —Dry copses, N.S. westward.

†† Heads small or middle-sized, panicled or sometimes thyrsoidal, not in a terminal corymbiform cyme; not alpine.

†† Leaves more or less plainly 3-ribbed; heads in one-sided spreading or recurved racemes, forming an ample panicle. Not maritime.

|| Pubescent (at least the stem) or hispidulous-scabrous.

4. *S. Canadensis*, L. Stem rough-hairy, tall and stout (3-6° high); leaves lanceolate, pointed, sharply serrate (sometimes almost entire), more or less pubescent beneath and rough above; heads small; rays very short. —Borders of thickets and fields; very common. —Varies greatly in the roughness and hairiness of the stem and leaves, the latter oblong-lanceolate or elongated linear-lanceolate; —in var. *procera*, whitish-woolly underneath; and in var. *scabra* also very rough above, often entire, and rugose-veined.

5. *S. nemoralis*, Ait. Clothed with a minute and close grayish-hoary (soft or roughish) pubescence; stem simple or corymbd at the summit ($\frac{1}{2}$ -2 $\frac{1}{2}$ ° high); leaves oblanceolate or spatulate oblong, the lower somewhat crenate-toothed and tapering into a petiole; racemes numerous, dense, at length recurved, forming a large and crowded compound raceme or panicle which is usually turned to one side; scales of the involucre linear-oblong, appressed; rays 5-9. —Dry sterile fields; very common. Flowers very bright yellow, beginning early in August.

3. **ASTER**, L. STARWORT. **ASTER**.

Heads many-flowered, radiate ; the ray-flowers in a single series, fertile. Scales of the involucre more or less imbricated, usually with herbaceous or leaf-like tips. Receptacle flat, alveolate. Achenes more or less flattened ; pappus simple, of capillary bristles.—Perennial herbs, with corymbed, paniced, or racemose heads ; flowering in autumn. Rays white, purple, or blue ; the disk yellow, often changing to purple.—(Name ἀστὴρ, *a star*, from the radiate heads of flowers.)

Conspectus of Groups.

Scales closely imbricated, scarcely at all herbaceous ; leaves cordate, serrate .. 1, 2

Scales with herbaceous tips or the outer wholly foliaceous. **ASTER proper.**

Lower leaves more or less cordate, petiolate 4

Involucre (and branchlets) viscid or glandular ; leaves not cordate, mostly entire, the cauline all sessile or clasping 3

Lower leaves all acute at base ; not glandular nor viscid nor silky-canescant.

Remaining species ; branches erect or ascending.

Stem-leaves auriculate-clasping or with winged-petiole-like base ; involucre lax 5

§ 1. **BIOTIA**. *Involucre obovoid-bell-shaped ; the scales regularly imbricated in several rows, appressed, nearly destitute of herbaceous tips ; rays 6-18 (white or nearly so) ; achenes slender ; pappus slightly rigid, simple ; lower leaves large, heart-shaped, petioled, coarsely serrate ; heads in open corymbs.*

1. **A. corymbosus**, Ait. *Stem slender, somewhat zigzag ; leaves thin, smoothish, coarsely and unequally serrate with sharp spreading teeth, taper-pointed, ovate or ovate-lanceolate, all but the uppermost heart-shaped at the base and on slender naked petioles ; rays 6-9.*—Woodlands ; common, especially northward. July, Aug.—Plant 1-2° high, with smaller heads, looser corymbs, rounder and less rigid exterior involucreal scales, and thinner leaves than the next ; not rough, but sometimes pubescent.

2. **A. macrophyllus**, L. *Stem stout and rigid (2-3° high) ; leaves thickish, rough, closely serrate, abruptly pointed ; the lower heart-shaped (4-10' long, 3-6' wide), long-petioled ; the upper ovate or oblong, sessile or on margined petioles ; heads in ample rigid corymbs ; rays 10-15 (white or bluish).*—Moist woods ; common.

Aug., Sept.—Involucre $\frac{1}{2}$ ' broad ; the outer scales rigid, oblong or ovate-oblong, the innermost much larger and thinner.

§ 2. **ASTER** proper. Scales imbricated in various degrees, with herbaceous or leaf-like summits, or the outer entirely foliaceous ; rays numerous ; pappus simple, soft and nearly uniform (coarser and more rigid in the first group) ; achenes flattened. (All flowering late in summer or in autumn.)

* 1. Involucre and usually the branchlets viscidly or pruinose-glandular, well imbricated or loose ; pubescence not silky ; leaves entire (or the lower with few teeth), the cauline all sessile or clasping ; rays showy, violet to purple.

† Heads larger ; involucreal scales spreading, in few or many ranks.

3. **A. Novæ-Angliæ**, L. Stem stout, hairy (3–8° high), corymbed at the summit ; leaves very numerous, lanceolate, entire, acute, auriculate-clasping, clothed with minute pubescence, 2–5' long ; scales nearly equal, linear-awl-shaped, loose, glandular-viscid, as well as the branchlets ; rays violet-purple (in var. **ROSEUS** rose-purple), very numerous ; achenes hairy.—Moist grounds ; common.—Heads large. A peculiar and handsome species.

* 2. Lower leaves heart-shaped and petioled ; no glandular or viscid pubescence ; heads with short and appressed green-tipped scales, mostly small and numerous, racemose or panicked.

† Rays 0–20, involucreal scales appressed or erect.

‡ Leaves conspicuously serrate ; heads small ; rays pale blue or nearly white.

4. **A. cordifolius**, L. Stem much branched above, the spreading or diverging branches bearing very numerous panicked heads ; lower leaves all heart-shaped, on slender and mostly naked ciliate petioles ; scales of the inversely conical involucre all appressed and tipped with very short green points, obtuse or acutish.—Woodlands ; very common.—Heads profuse, but quite small. Varies with the stem and leaves either smooth, roughish, or sometimes hairy, also with the leaves all narrower.

* 3. Without heart-shaped petioled leaves, the radical and lower all acute or attenuate at base ; not glandular nor viscid, nor silky-canescenscent.

† *Involucre various, the heads when numerous densely or loosely paniculate on erect or ascending branches.*

‡ *Cauline leaves conspicuously contracted into a winged-petiole-like base or auriculate-clasping; involucre lax.*

5. A. puniceus, L. Stem tall and stout 3-7° high, rough-hairy all over or in lines, usually purple below, paniced above; leaves oblong-lanceolate, not narrowed or but slightly so to the auricled base, coarsely serrate to sparingly denticulate in the middle, rough above, nearly smooth beneath, pointed, heads 4-6" high, subsessile; scales narrowly linear, acute, loose, equal, in about 2 rows; rays long and showy (lilac-blue, paler in shade).—Low thickets and swamps; very common.

4. ERIGERON, L. FLEABANE.

Heads many-flowered, radiate, mostly flat or hemispherical; the narrow rays very numerous, pistillate. Involucral scales narrow, equal and little imbricated, never coriaceous, foliaceous, nor green-tipped. Receptacle flat or convex, naked. Achenes flattened, usually pubescent and 2-nerved; pappus a single row of capillary bristles, with minuter ones intermixed, or with a distinct short outer pappus of little bristles or chaffy scales.—Herbs, with entire or toothed and generally sessile leaves, and solitary or corymbed naked-pedunculate heads. Disk yellow; ray white or purple. (Name from *ἔρ*, *spring*, and *γέρων*, *an old man*, suggested by the hoariness of some vernal species.)

§ 1. ERIGERON proper. *Rays elongated, crowded in one or more rows.*

* *Leafy-stemmed perennials; pappus simple.*

1. **E. bellidifolius, Muhl.** ROBIN'S PLANTAIN. Hairy, producing offsets from the base; stem simple, rather naked above, bearing few (1-9) large heads on slender peduncles; root-leaves obovate and spatulate, sparingly toothed, the cauline distant, lanceolate-oblong, partly clasping, entire; rays (about 50) rather broad, light bluish-purple.—Copses and moist banks; common. May.

2. **E. Philadelphicus, L.** COMMON FLEABANE. Hairy; stem leafy, corymbed, bearing several small heads; leaves thin, with a broad midrib, oblong; the upper smoothish, clasping by a heart-

shaped base, mostly entire, the lowest spatulate, toothed; rays innumerable and very narrow, rose-purple or flesh-color.—Moist ground; common. June–August.

5. ANTENNARIA, Gaertn. EVERLASTING.

Heads many-flowered, dioecious; flowers all tubular; pistillate corollas very slender. Involucre dry and scarious, white or colored; imbricated. Receptacle convex or flat, not chaffy. Anthers caudate. Achenes terete or flattish; pappus a single row of bristles, in the fertile flowers capillary, united at base so as to fall in a ring, and in the sterile thickened and club-shaped or barbellate at the summit.—Perennial white-woolly herbs, with entire leaves and corymbed (rarely single) heads. Corolla yellowish. (Name from the resemblance of the sterile pappus to the antennae of certain insects.)

1. *A. plantaginifolia*, Hook. PLANTAIN-LEAVED EVERLASTING. Spreading by offsets and runners, low (3–18' high); leaves silky-woolly when young, at length green above and hoary beneath; those of the simple and scape-like flowering stems small, lanceolate, appressed; the radical obovate or oval-spatulate, petioled, ample, 3-nerved; heads in a small crowded corymb; scales of the (mostly white) involucre obtuse in the sterile, and acutish and narrower in the fertile plant.—Sterile knolls and banks; common. March–May.

6. ANAPHALIS, DC. EVERLASTING.

Characters as of *Antennaria*, but the pappus in the sterile flowers not thickened at the summit or scarcely so, and that of the fertile flowers not at all united at base; fertile heads usually with a few perfect but sterile flowers in the centre. (Said to be an ancient Greek name of some similar plant.)

1. *A. margaritacea*, Benth. and Hook. PEARLY EVERLASTING. Stem erect (1–2° high), corymbose at the summit, with many heads, leafy; leaves broadly to linear-lanceolate, taper-pointed, sessile, soon green above; involucreal scales pearly-white, very numerous, obtuse or rounded, radiating in age. (*Antennaria margaritacea*, R. Br.)—Dry hills and woods; common. August. (N. E. Asia.)

7. GNAPHALIUM, L. CUDWEED.

Heads many-flowered; flowers all tubular, the outer pistillate and very slender, the central perfect. Scales of the involucre dry

and scarious, white or colored, imbricated in several rows. Receptacle flat, naked. Anthers caudate. Achenes terete or flattish; pappus a single row of capillary rough bristles.—Woolly herbs, with sessile or decurrent leaves, and clustered or corymbed heads; fl. in summer and autumn. Corolla whitish or yellowish. (Name from γνάφαλον, *a lock of wool*, in allusion to the floccose down.)

§ 1. GNAPHALIUM proper. *Bristles of the pappus distinct.*

1. **G. polycephalum**, Michx. COMMON EVERLASTING. Erect, woolly annual (1-3° high), fragrant; *leaves lanceolate, tapering at the base, with undulate margins, not decurrent, smoothish above; heads clustered at the summit of the paniced-corymbose branches, ovate-conical before expansion, then obovate; scales (whitish) ovate and oblong, rather obtuse; perfect flowers few.*—Old fields and woods; common.

2. **G. uliginosum**, L. LOW CUDWEED. *Diffusely branched, appressed woolly annual (3-6' high); leaves spatulate-ob lanceolate or linear, not decurrent; heads (small) in terminal sessile capitulate clusters subtended by leaves; scales brownish, less imbricated.*—Low grounds; common, N.S. to Ont., and northward; perhaps introduced. (Eu.)

8. AMBROSIA, Tourn. RAGWEED.

Sterile and fertile flowers occupying different heads on the same plant; the fertile 1-3 together and sessile in the axil of leaves or bracts, at the base of the racemes or spikes of sterile heads. Sterile involucre flattish or top-shaped, of 7-12 scales united into a cup, containing 5-20 funnel-form staminate flowers, with slender chaff intermixed, or none. Anthers almost separate. Fertile involucre (fruit) oblong or top-shaped, closed, pointed, resembling an achene (usually with 4-8 tubercles or horns near the top in one row), and enclosing a single flower which consists of a pistil only; the elongated style-branches protruding. Achenes ovoid; pappus none.—Coarse homely weeds, with opposite or alternate lobed or dissected leaves, and inconspicuous greenish flowers, in late summer and autumn; ours annuals. (The Greek and later Latin name of several plants, as well as of the food of the gods.)

§ 1. *Sterile heads in single or paniced racemes or spikes, the involucre regular.*

* *Leaves many of them alternate, all once or twice pinnatifid.*

1. **A. artemisiæfolia**, L. ROMAN WORMWOOD. HOG-WEED. BITTER-WEED. Much-branched (1-3° high), hairy or roughish-pubescent; leaves thin, twice-pinnatifid, smoothish above, paler or hoary beneath; fruit obovoid or globular, armed with about 6 short acute teeth or spines.—Waste places, everywhere.—Extremely variable, with finely cut leaves, on the flowering branches often undivided; rarely the spikes bear all fertile heads.

9. **RUDBECKIA**, L. CONE-FLOWER.

Heads many-flowered, radiate; the rays neutral. Scales of the involucre leaf-like, in about 2 rows, spreading. Receptacle conical or columnar; the short chaff concave, not rigid. Achenes 4-angular (in our species), smooth, not margined, flat at the top, with no pappus, or a minute crown-like border.—Chiefly perennial herbs, with alternate leaves, and showy terminal heads; the rays generally long, yellow, often darker at base. (Named in honor of the Professors Rudbeck, father and son, predecessors of Linnæus at Upsal.)

* *Disk columnar in fruit dull greenish-yellow; leaves divided and cut.*

1. **R. laciniata**, L. Stem smooth, branching (2-7° high); leaves smooth or roughish, the lowest pinnate, with 5-7-cut or 3-lobed leaflets; upper leaves irregularly 3-5-parted, the lobes ovate-lanceolate, pointed, or the uppermost undivided; heads long peduncled; disk at first globular or hemispherical; chaff truncate, downy at the tip; rays oblanceolate (1-2' long), drooping.—Low thickets; common. July-Sept.

** *Disk hemispherical to oblong-ovoid in fruit, dark purple or brown.*

† *Leaves undivided, rarely laciniately toothed.*

2. **R. hirta**, L. Biennial, very rough and bristly-hairy throughout; stems simple or branched near the base, stout (1-2° high), naked above, bearing single large heads; leaves nearly entire; the upper oblong or lanceolate, sessile; the lower spatulate, triple-nerved, petioled; rays (about 14) more or less exceeding the involucre; chaff of the dull brown disk hairy at the tip, acutish.—Dry soil; now common as a weed. June-Aug.

10. **HELIANTHUS**, L. SUNFLOWER.

Heads many-flowered, radiate; rays several or many, neutral. Involucre imbricated, herbaceous or foliaceous. Receptacle flat or

convex; the persistent chaff embracing the 4-sided and laterally compressed smooth achenes, which are neither winged nor margined. Pappus very deciduous, of 2 thin chaffy scales on the principal angles, and sometimes 2 or more small intermediate scales.—Coarse and stout herbs, with solitary or corymbed heads, and yellow rays; flowering toward autumn. (Named from *ἥλιος*, the sun, and *ἄνθος*, a flower.)

§ 1. *Perennials; receptacle convex or at least low-conical; lower leaves usually opposite.*

* *Involucre loose, the scales acuminate or elongated or foliaceous; disk yellow (anthers dark).*

† *Leaves narrow, chiefly alternate, not 3-nerved, scabrous both sides; heads rather small; scales loose, attenuate.*

1. *H. giganteus*, L. Stem hairy or rough (3–10° high), branched above; leaves lanceolate, pointed, minutely serrate or nearly entire, green both sides, narrowed and ciliate at base, but nearly sessile; scales long, linear-lanceolate, pointed, hairy or strongly ciliate.—Low thickets and swamps; common.

†† *Leaves all or most of them opposite, 3-nerved.*

‡ *Heads larger; rays usually over 10; spreading by creeping rootstocks.*

|| *Leaves sessile or subsessile to short-petiolate, serrulate or entire.*

2. *H. divaricatus*, L. Stem simple or forked and corymbed at the top (1–4° high), smooth below; leaves all opposite and divaricate, ovate-lanceolate, 3-nerved from the rounded or truncate sessile base, tapering gradually to a sharp point (3–6' long), serrate, thickish, rough both sides; scales narrowly lanceolate, attenuate, ciliate, equalling the disk; rays 8–12.—Thickets and barrens; common.—Disk 6" wide; rays 1' long.

||| *Leaves longer-petiolate, thinnish or soft, coarsely serrate, commonly broad; scales loose, hirsute-ciliate.*

3. *H. decapetalus*, L. Stem branching (2–5° high), smooth below; leaves smooth or roughish, ovate, pointed, abruptly contracted into margined petioles; scales lanceolate-linear, elongated, loosely spreading, sometimes foliaceous, the outer longer than the disk; rays about 10.—Copses and low banks of streams; common.

11. **BIDENS**, L. BUR-MARIGOLD.

Heads many-flowered; the rays when present 3-8, neutral. Involucre double, the outer commonly large and foliaceous. Receptacle flattish; the chaff deciduous with the fruit. Achenes flattened parallel with the scales of the involucre, or slender and 4-sided, crowned with 2 or more rigid and persistent awns which are downwardly barbed.—Annual or perennial herbs, with opposite various leaves, and mostly yellow flowers. (Latin, *bidens*, two-toothed.)

* *Achenes flat, not tapering at the summit; outer involucre foliaceous; annuals.*

† *Heads erect, nearly rayless; leaves mostly petiolate.*

1. **B. frondosa**, L. COMMON BEGGAR-TICKS. STICK-TIGHT. Smooth or rather hairy, tall (2-6° high), branching; *leaves* 3-5-divided; *leaflets* mostly stalked, lanceolate, pointed, coarsely toothed; outer involucre much longer than the head, ciliate below; *achenes* wedge-obovate, 2-awned, ciliate (the bristles ascending except near the summit).—Moist waste places; a coarse troublesome weed, the achenes, as in the other species, adhering to clothing, etc., by their retrorsely barbed awns. July-Oct.

2. **B. connata**, Muhl. SWAMP BEGGAR-TICKS. Smooth (1-2° high); *leaves* lanceolate or oblong-lanceolate, pointed, sharply serrate, tapering into margined slightly united petioles; *the lower* often 3-divided, *their lateral divisions* united at the base and decurrent on the petiole; outer scales longer than the head, few, mostly obtuse; *rays* none; *achenes* narrowly wedge-form, 3- (2-4) awned, *the margins* minutely retrorsely ciliate.—N.B. westward.

†† *Heads somewhat nodding, commonly radiate; leaves sessile, undivided.*

3. **B. cernua**, L. SMALLER BUR-MARIGOLD. Nearly smooth (5'-3° high); *leaves* lanceolate, *unequally serrate, scarcely connate*; *heads* nodding, *with or without* (light yellow) *rays*; outer involucre longer than the head; achenes wedge-obovate, 4-awned, the margins downwardly barbed.—Wet places, N.S. westward. July-Sept.—Rays, if any, smaller than in n. 4, and the outer involucre more leaf-like. (Eu.)

4. **B. chrysanthemoides**, Michx. LARGER BUR-MARIGOLD. Smooth, erect, or reclining at the base (6'-2° high); leaves lanceolate, tapering at both ends, more or less connate; regularly serrate; outer involucre mostly shorter than the showy golden-yellow (1' long) rays; achenes wedge-shaped, with almost prickly downwardly barbed margins; awns 2, 3, or 4.—Swamps; common. Aug.—Oct.

12. **ACHILLEA**, L. YARROW.

Heads many-flowered, radiate; the rays few, fertile. Involucral scales imbricated, with scarious margins. Receptacle chaffy, flattish. Achenes oblong, flattened, margined; pappus none.—Perennial herbs, with small corymbose heads. (So named because its virtues are said to have been discovered by *Achilles*.)

1. **A. Millefolium**, L. COMMON YARROW OR MILFOIL. Stems simple; leaves twice-pinnately parted; the divisions linear, 3-5-cleft, crowded; corymb compound, flat-topped; involucre oblong; rays 4-5, short, white (sometimes rose-color).—Fields and hills; common. Aug. (Eu.)

13. **CHRYSANTHEMUM**, TOURN. OX-EYE DAISY.

Heads many-flowered; rays numerous, fertile. Scales of the broad and flat involucre imbricated, with scarious margins. Receptacle flat or convex, naked. Disk-corollas with a flattened tube. Achenes of disk and ray similar, striate, without pappus.—Perennial herbs, with toothed, pinnatifid, or divided leaves, and single or corymbed heads. Rays white; disk yellow. (Old Greek name, *χρυσάνθεμον*, i.e. golden flower.)

1. **C. Leucanthemum**, L. OX-EYE OR WHITE DAISY. WHITE-WEED. Stem erect, nearly simple, naked above and bearing a single large head; root-leaves spatulate, petioled, the others partly clasping, all cut or pinnatifid-toothed; scales of the involucre with rusty-brown margins. (*Leucanthemum vulgare*, Lam.)—Fields and meadows; common. June, July. A pernicious weed, with large and showy heads. It occurs with abortive, deformed, or tubular and lacinate rays. (Nat. from Eu.)

14. **TANACETUM**, L. TANSY.

Heads many-flowered, nearly discoid; flowers all fertile, the marginal chiefly pistillate and 3-5-toothed. Involucre imbricated,

dry. Receptacle convex naked. Achenes angled or ribbed, with a large flat top; pappus a short crown.—Bitter and acrid strong-scented herbs (ours perennial), with 1–3-pinnately dissected leaves, and corymbed heads. Flowers yellow; in summer. (Name of uncertain derivation.)

1. **T. vulgare**, L. COMMON TANSY. Stem (2–4° high) smooth; leaflets and the wings of the petiole cut-toothed; corymb dense; pistillate flowers terete, with oblique 3-toothed limb; pappus 5-lobed.—Var. **CRISPUM** has the leaves more cut and crisped.—Escaped from gardens to roadsides; common. (Nat. from Eu.)

15. CICHORIUM, Tourn. SUCCORY or CHICORY.

Heads several flowered. Involucre double, herbaceous, the inner of 8–10 scales, the outer 5, short and spreading. Achenes striate; pappus of numerous small chaffy scales, forming a short crown.—Branching perennials, with deep roots; the sessile heads 2 or 3 together, axillary and terminal. Flowers bright blue, varying to purple or pink, showy. (Altered from the Arabian name of the plant.)

1. **C. Intybus**, L. Stem-leaves oblong or lanceolate, partly clasping, the lowest runcinate, those of the rigid flowering branches minute.—Roadsides, everywhere. July–Oct. (Nat. from Eu.)

16. LEONTODON, L. HAWKBIT.

Heads many-flowered. Involucre scarcely imbricated, but with several bractlets at the base. Achenes spindle-shaped, striate, all alike; pappus persistent, composed of plumose bristles which are enlarged and flattened toward the base.—Low and stemless perennials, with toothed or pinnatifid root-leaves, and scapes bearing one or more yellow heads. (Name from *λέων*, a lion, and *ὀδούς*, a tooth, in allusion to the toothed leaves.)

1. **L. autumnalis**, L. FALL DANDELION. Leaves lacinate-toothed or pinnatifid, somewhat pubescent; scape branched, 5–15' high; peduncles thickened at the summit, scaly-bracteate.—Meadows and roadsides; N.S. to Ont. June–Nov. (Nat. from Eu.)

17. HIERACIUM, Tourn. HAWKWEED.

Heads 12–many-flowered. Involucre more or less imbricated. Achenes short, oblong or columnar, striate, not beaked; pappus a

single row of tawny and fragile capillary rough bristles.—Hispid or hirsute and often glandular perennials, with entire or toothed leaves, and single or paniced heads of mostly yellow flowers; summer and early autumn. (Name from *ἰεραξ*, a hawk.)

§ 1. *Involucre not much imbricate, scarcely calyculate; achenes oblong; pappus not copious.*

1. **H. Canadense**, Michx. Stems simple, leafy, corymbed at the summit (1–3° high); leaves sessile, lanceolate or ovate-oblong, acute, remotely and very coarsely toothed, somewhat hairy, the uppermost slightly clasping.—Dry woods, N.S. westward.

§ 2. *Heads small; involucre cylindrical, scarcely imbricated.*

* *Achenes columnar, not attenuate upward when mature; panicle not virgate.*

2. **H. scabrum**, Michx. Stem rather stout (1–3° high), leafy, rough-hairy, the stiff panicle at first racemose, at length rather corymbose; the thickish pedicels and the hoary 40–50-flowered involucre densely clothed with dark glandular bristles; leaves obovate or oval, nearly entire, hairy.—Dry open woods; common.

18. **TARAXACUM**, Haller. DANDELION.

Head many-flowered, large, solitary on a slender hollow scape. Involucre double, the outer of short scales; the inner of long linear scales, erect in a single row. Achenes oblong-ovate to fusiform, 4–5-ribbed, the ribs roughened, the apex prolonged into a very slender beak, bearing the copious soft and white capillary pappus.—Perennials or biennials; leaves radical, pinnatifid or runcinate; flowers yellow. (Name from *ταράσσω*, to disquiet or disorder, in allusion to medicinal properties.)

1. **T. officinale**, Weber. COMMON DANDELION. Smooth, or at first pubescent; outer involucre reflexed. (*T. Dens-leonis*, Desf.)—Pastures and fields everywhere. Indigenous forms occur northward and in the Rocky Mountains. April–September.—After blossoming, the inner involucre closes, and the slender beak elongates and raises up the pappus while the fruit is forming; the whole involucre is then reflexed, exposing to the wind the naked fruits, with the pappus displayed in an open globular head. (Eu.)

ORDER 40. LOBELIACEÆ (LOBELIA FAMILY).

Herbs with acrid milky juice, alternate leaves, and scattered flowers, an irregular monopetalous 5-lobed corolla; the 5 stamens free from the corolla, and united into a tube commonly by their filaments and always by their anthers.—Calyx-tube adherent to the many-seeded pod. Style 1; stigma often fringed. Seeds anatropous, with a small straight embryo, in copious albumen.—Nearly passing into the following order.

1. LOBELIA, L.

Calyx 5-cleft, with a short tube. Corolla with a straight tube, split down on the (apparently) upper side, somewhat 2-lipped; the upper lip of 2 rather erect lobes, the lower lip spreading and 3-cleft. Two of the anthers in our species bearded at the top. Pod 2-celled, many-seeded, opening at the top.—Flowers axillary or chiefly in bracted racemes; in summer and early autumn. (Dedicated to *Matthias De l'Obel*, an early Flemish herbalist.)

* *Flowers deep red, large; stem simple.*

1. *L. cardinalis*, L. CARDINAL-FLOWER. Tall (2-4° high), smoothish; leaves oblong-lanceolate, slightly toothed; raceme elongated, rather 1-sided; the pedicels much shorter than the leaf-like bracts.—Low grounds; common.

** *Flowers blue, or blue variegated with white.*

† *Flowers rather large (corolla-tube 5-6" long), spicate-racemose; stems leafy, 1-3° high; perennial.*

‡ *Leaves ovate to lanceolate, numerous; lip of corolla glabrous.*

2. *L. syphilitica*, L. GREAT LOBELIA. Somewhat hairy; leaves thin, acute at both ends (2-6' long), irregularly serrate; flowers (nearly 1' long) pedicelled, longer than the leafy bracts; calyx hirsute, the sinuses with conspicuous deflexed auricles, the short tube hemispherical.—Low grounds, common.—Flowers light blue, rarely white.

†† *Flowers smaller (corolla-tube not more than 2-3" long).*

‡ *Stem leafy, often paniculately branched; flowers loosely racemose; sinuses of calyx not appendaged; annual or biennial.*

|| *Leaves chiefly linear, entire or denticulate; pod not inflated.*

3. **L. Kalmii**, L. Stem mostly low (4-18' high), minutely angled; *pedicels filiform, not exceeding the linear or setaceous bracts but as long as the flower, minutely 2-bracteolate or 2-glandular above the middle; calyx-tube top-shaped or obovoid, fully half the length of the lobes, in fruit rather longer than they, covering the whole pod; corolla light blue, 4-5" long.*—Wet limestone rocks, Anticosti westward.

||| *Leaves ovate or oblong, obtusely toothed; pod inflated, wholly inferior.*

4. **L. inflata**, L. INDIAN TOBACCO. Stems paniculately much branched from an annual root, pubescent with spreading hairs (1-2° high); leaves gradually diminishing into leaf-like bracts, which exceed the lower short-pedicelled flowers; calyx-tube ovoid.—Dry open fields.—Corolla only 1½-2" long. Plant poisonous and a noted quack medicine.

ORDER 40. CAMPANULACEÆ (CAMPANULA FAMILY).

Herbs, with milky juice, alternate leaves, and scattered flowers; calyx adherent to the ovary; the regular 5-lobed corolla bell-shaped, valvate in the bud; the 5 stamens usually free from the corolla and distinct.—Style 1, usually beset with collecting hairs above; stigmas 2 or more. Capsule 2-several-celled, many-seeded. Seed small, anatropous, with a straight embryo in fleshy albumen. Flowers generally blue and showy.

1. CAMPANULA, Tourn. BELLFLOWER.

Calyx 5-cleft. Corolla generally bell-shaped, 5-lobed. Stamens 5, separate; the filaments broad and membranaceous at the base. Stigmas and cells of the capsule 3 in our species, the short pod opening on the sides by as many valves or holes.—Herbs, with terminal or axillary flowers; in summer. (A diminutive of the Italian *campana*, a bell, from the shape of the corolla.)

* *Style straight; openings of capsule below the middle.*

† *Slender perennials, mostly glabrous; flowers one or few, on slender peduncles.*

1. **C. rotundifolia**, L. HAREBELL. Slender, branching (5-12' high), 1-10-flowered; *root-leaves round-heart-shaped or ovate, mostly*

toothed or crenate, long-petioled, early withering away; *stem-leaves* numerous, linear or narrowly lanceolate, entire, smooth; *calyx-lobes* awl-shaped, from $\frac{1}{3}$ to $\frac{2}{3}$ the length of the bright-blue corolla (which is 6-9" long); *capsule* nodding.—Rocky shaded banks, Lab. to R. Mts.—A delicate and pretty species, but with a most inappropriate name, since the round root-leaves are rarely obvious. (Eu.)

**** Style declined and upwardly curved, much longer than the rotate corolla; openings of the capsule close to the summit; inflorescence spicate.**

2. O. Americana, L. TALL BELLFLOWER. Annual; stem mostly simple (3-6° high); leaves ovate and ovate-lanceolate, taper-pointed, serrate, mostly on margined petioles, thin, somewhat hairy (2½-6' long); spike 1-2° long; corolla light blue, 1' broad.—Moist rich soil, N.B. to Ont.

ORDER 41. ERICACEÆ (HEATH FAMILY).

Shrubs, sometimes herbs, with the flowers regular or nearly so; stamens as many or twice as many as the 4-5-lobed or 4-5-petalled corolla, free from but inserted with it; anthers 2-celled, commonly appendaged, or opening by terminal chinks or pores, introrse (except in Sub-order 3); style 1; ovary 3-10-celled. Pollen compound, of 4 united grains (except in Sub-order 4). Seeds small, anatropous. Embryo small, or sometimes minute, in fleshy albumen.—A large family, very various in many of the characters, comprising four well-marked sub-orders, as follows :—

SUB-ORDER I. Vaccinieæ. WHORTLEBERRY FAMILY. Calyx-tube adherent to the ovary, which forms an edible berry or berry-like fruit, crowned with the short calyx-teeth. Anther-cells opening at the apex.—Shrubs or somewhat woody plants, with scaly buds.

1. **Gaylussacia.** Ovary 10-celled, with a single ovule in each cell. Fruit a berried drupe with 10 small seed-like nutlets.
2. **Vaccinium.** Berry 4-5-celled (or imperfectly 8-10-celled by false partitions), many-seeded. Anther-cells tapering upward into a tube.
3. **Chiogenes.** Berry 4-celled, many-seeded, its summit free. Anther-cells not prolonged into a tube, but each 2-pointed. Slender trailing evergreen.

SUB-ORDER II. Ericinæ. HEATH FAMILY proper. Calyx free from the ovary. Corolla gamopetalous, rarely polypetalous, hypogynous.—Shrubs or small trees.

Tribe I. ANDROMEDEÆ. Fruit a loculicidal capsule (berry-like in n. 6). Corolla deciduous.

* Anther-cells opening through their whole length, not appendaged.

4. **Epigæa.** Corolla salver-shaped. Calyx of 5 separate dry and pointed sepals.

* * Anther-cells opening only at the top. Corolla not salver-shaped.

† Calyx becoming enlarged and berry-like in fruit.

5. **Gaultheria.** Calyx 5-cleft, in fruit enclosing the capsule. Anthers 4-awned at top.

Tribe III. RHODODENDREÆ. Fruit a septicidal capsule. Corolla deciduous.

* Anther-cells opening by a hole or chink at the top.

† Flowers not from scaly buds; the bracts leaf-like or coriaceous.

6. **Kalmia.** Corolla broadly bell-shaped or wheel-shaped, with 10 pouches receiving as many anthers. Leaves oblong or linear.

† † Flowers developed from large scaly buds, the scales or bracts caducous.

7. **Rhododendron.** Flowers usually 5-merous. Corolla bell-shaped or funnel-form, lobed or parted, often somewhat irregular. Leaves deciduous or evergreen.

8. **Ledum.** Corolla regular, all 5 petals nearly separate. Stamens 5-10. Leaves evergreen.

SUB-ORDER III. Pyroleæ. PYROLA FAMILY. Calyx free from the ovary. Corolla polypetalous. Anthers extrorse in the bud, opening by pores at the base (inverted in the flower). Seeds with a loose and translucent cellular coat much larger than the nucleus.

Tribe I. PYROLEÆ. Herbs or nearly so, with evergreen foliage. Pollen-grains compound. Capsule 5- (rarely 4) celled.

9. **Chimaphila.** Stems leafy. Flowers corymbd or umbelled. Petals widely spreading. Style very short and top-shaped. Valves of the capsule smooth on the edges.

10. **Moneses.** Scape 1-flowered. Petals widely spreading. Style straight, exserted; stigma 5-rayed. Valves of the capsule smooth on the edges.

11. **Pyrola.** Acaulescent. Flowers in a raceme. Petals not widely spreading. Filaments awl-shaped. Style long. Valves of the capsule cobwebby on the edges.

SUB-ORDER IV. Monotropeæ. INDIAN-PIPE FAMILY. Flowers nearly as in Sub-orders 2 or 3, but the plants herbaceous, root-parasitic, entirely destitute of green foliage, and with the aspect of Beech-drops. Seeds as in Sub-order 3.

* Corolla of 4 or 5 separate petals; calyx imperfect or bract-like.

12. **Monotropa.** Petals narrow. Anthers kidney-shaped, opening across the top.

1. GAYLUSSACIA, HBK. HUCKLEBERRY.

Corolla tubular, ovoid, or bell-shaped; the border 5-cleft. Stamens 10; anthers awnless; the cells tapering upward into more

or less of a tube, opening by a chink at the end. Fruit a berry-like drupe, containing 10 seed-like nutlets.—Branching shrubs, with the aspect of *Vaccinium*, commonly sprinkled with resinous dots; the flowers (white tinged with purple or red) in lateral and bracted racemes. (Named for the distinguished chemist, *Gay-Lussac*.)

* *Leaves deciduous, entire, sprinkled more or less with resinous or waxy atoms.*

1. *G. resinosa*, Torr. and Gray. BLACK HUCKLEBERRY. Much branched, rigid, *slightly pubescent* when young (1–3° high); leaves oval, oblong-ovate, or oblong, thickly clothed and at first *clammy*, as well as the flowers, with shining resinous globules; racemes short, clustered, one-sided; pedicels about the length of the flowers; bracts and bractlets (reddish) small and deciduous; corolla ovoid-conical, or at length cylindrical with an open mouth; fruit black, without bloom (pleasant, very rarely white).—Rocky woodlands and swamps, Newf. westward. May, June.—The common *Huckleberry* of the markets.

2. *VACCINIUM*, L. BLUEBERRY. BILBERRY. CRANBERRY.

Corolla various in shape; the limb 4–5-cleft, revolute. Stamens 8 or 10; anthers sometimes 2-awned on the back; the cells separate and prolonged upward into a tube, opening by a hole at the apex. Berry 4–5-celled, many-seeded, or sometimes 8–10-celled by a false partition stretching from the back of each cell to the placenta.—Shrubs with solitary, clustered, or racemed flowers; the corolla white or reddish. (Ancient Latin name, of obscure derivation.)

§1. *CYANOCOCCUS*. BLUEBERRIES. *Corolla cylindraceous to campanulate, 5-toothed; filaments hairy; anthers included, awnless; berry (sweet and edible) blue or black with bloom, completely or incompletely 10-celled; flowers in fascicles or short racemes, short-pedicelled, appearing from large scaly buds with or before the leaves.*

* *Corolla rather short and broad.* BLUEBERRIES OR BLUE HUCKLEBERRIES.

1. *V. Pennsylvanicum*, Lam. DWARF BLUEBERRY. Dwarf (6–15' high), smooth, with green warty stems and branches; leaves

lanceolate or oblong, distinctly serrulate with bristle-pointed teeth, smooth and shining both sides (or sometimes downy on the midrib underneath); corolla short, cylindrical-bell-shaped; berries bluish-black and glaucous.—Dry hills, Newf. to Sask. The lowest and earliest ripened of the blueberries.

2. **V. Canadense**, Kalm. Low (1-2° high); *leaves oblong-lanceolate or elliptical, entire, downy both sides, as well as the crowded branchlets; corolla shorter; otherwise as the last.*—Swamps or moist woods, common.

3. **V. corymbosum**, L. COMMON OR SWAMP-BLUEBERRY. *Tall (5-10° high); leaves ovate, oval, oblong, or elliptical-lanceolate; corolla varying from turgid-ovate and cylindrical-urn-shaped to oblong-cylindrical, 3-4" long*—Swamps and low thickets, Newf. to Ont. This yields the common blueberry or blue huckleberry of the latter part of the season.

§ 2. **OXYCOCCUS**. *Corolla deeply 4-parted or -cleft, with linear reflexed lobes; anthers exerted, awnless, with very long terminal tubes; berry 4-celled; flowers axillary or terminal, nodding on long filiform pedicels.*

* *Stems very slender, creeping or trailing; leaves small, entire, whitened beneath, evergreen; pedicels erect, the pale rose-colored flower nodding; corolla 4-parted; berries red, acid.*—CRANBERRIES.

4. **V. Oxycoccus**, L. SMALL CRANBERRY. *Stems very slender (4-9' long); leaves ovate, acute, with strongly revolute margins (2-3" long); pedicels 1-4, terminal; filaments fully $\frac{1}{2}$ as long as the anthers.*—Peat-bogs, Newf. to Pacific and northward. June.—Berry 3-4" broad, often speckled with white when young; seldom gathered for market. (Eu., Asia.)

5. **V. macrocarpon**, Ait. LARGE OR AMERICAN CRANBERRY. *Stems elongated (1-4° long), the flowering branches ascending; leaves oblong, obtuse, less revolute (4-6" long); pedicels several, becoming lateral; filaments scarcely one-third the length of the anthers.*—Peat-bogs, Newf. to Sask. and northward. June.—Berry $\frac{1}{2}$ -1' long.

3. **CHIOGENES**, Salisb. CREEPING SNOWBERRY.

Calyx-tube adherent to the ovary; limb 4-parted, persistent. Corolla bell-shaped, deeply 4-cleft. Stamens 8, included, inserted

on an 8-toothed disk; filaments very short and broad; anther-cells ovate-oblong, separate, not awned on the back, but each minutely 2-pointed at the apex, and opening by a large chink down to the middle. Berry white, globular, rather dry, 4-celled, many-seeded. —A trailing and creeping evergreen, with very slender and scarcely woody stems, and small Thyme-like, ovate and pointed leaves on short petioles, with revolute margins, smooth above, the lower surface and the branches beset with rigid rusty bristles. Flowers very small, solitary in the axils, on short nodding peduncles, with 2 large bractlets under the calyx. (Name from χιών, *snow*, and γένος, *offspring*, in allusion to the snow-white berries.)

1. *C. serpyllifolia*, Salisb. Leaves 3-4" long; berries 3" broad, bright white. (*C. hispidula*, Torr. and Gray.)—Peat-bogs and mossy woods, Lab. to R. Mts. and northward. May.—Plant with the aromatic flavor of Gaultheria or Sweet Birch.

4. EPIGÆA, L. GROUND LAUREL. TRAILING ARBUTUS.

Corolla salver-form; the tube hairy inside, as long as the ovate-lanceolate pointed and scale-like nearly distinct sepals. Stamens 10, with slender filaments; anthers oblong, awnless, opening lengthwise. Style slender, its apex (as in *Pyrola*) forming a sort of ring or collar around and partly adnate to the 5 little lobes of the stigma. Capsule depressed-globular, 5-lobed, 5-celled, many-seeded.—A prostrate or trailing scarcely shrubby plant, bristly with rusty hairs, with evergreen and reticulate rounded and heart-shaped alternate leaves, on slender petioles, and with rose-colored flowers in small axillary clusters, from scaly bracts. (Name composed of ἐπί, *upon*, and γῆ, *the earth*, from the trailing growth.)

1. *E. repens*, L. Sandy woods, or in rocky soil, especially in the shade of pines, Newf. to Ont.—Flowers appearing in early spring, exhaling a rich spicy fragrance, dimorphous as to style and stamens and subdioecious. In New England called MAYFLOWER.

5. GAULTHERIA, Kalm. AROMATIC WINTERGREEN.

Corolla cylindrical-ovoid or a little urn-shaped, 5-toothed. Stamens 10, included; anther-cells each 2-awned at the summit, opening by a terminal pore. Capsule depressed, 5-lobed, 5-celled, 5-valved, many-seeded, enclosed when ripe by the calyx, which thickens and turns fleshy, so as to appear as a globular red berry.

Shrubs, or almost herbaceous plants, with alternate evergreen leaves and axillary (nearly white) flowers; pedicels with 2 bractlets. (Dedicated by Kalm to "*Dr. Gauthier*," of Quebec.)

1. *G. procumbens*, L. CREEPING WINTERGREEN. Stems slender and extensively creeping on or below the surface; the flowering branches ascending, leafy at the summit (3-5' high); leaves obovate or oval, obscurely serrate; flowers few, mostly single in the axils, nodding.—Cool damp woods, mostly in the shade of evergreens, Newf. to L. of Woods; also far northward. July.—The bright red berries (formed of the calyx) and the foliage have the well-known spicy-aromatic flavor of the Sweet Birch. Usually called *Wintergreen*, or sometimes in the interior *Tea-berry*. Eastward it is often called *Checkerberry* or *Partridge-berry* (names also applied to *Mitchella*, the latter especially so), also *Boxberry*.

6. *KALMIA*, L. AMERICAN LAUREL.

Calyx 5-parted. Corolla between wheel-shaped and bell-shaped, 5-lobed, furnished with 10 depressions in which the 10 anthers are severally lodged; filaments long and thread-form. Capsule globose, 5-celled, many-seeded.—Evergreen mostly smooth shrubs, with alternate or opposite entire coriaceous leaves, naked buds, and showy flowers. (Dedicated to *Peter Kalm*, a pupil of Linnæus, who travelled in this country about the middle of the last century, afterwards Professor at Abo.)

§ 1. *Flowers in simple or clustered naked umbel-like corymbs; pedicels from the axils of small and firm foliaceous persistent bracts; calyx smaller than the pod, persistent; leaves and branches glabrous, or nearly so.*

1. *K. angustifolia*, L. SHEEP LAUREL. LAMBKILL. WICKY. Shrub 1-3° high; leaves commonly opposite or in threes, pale or whitish underneath, light green above, narrowly oblong, obtuse, petioled; corymbs lateral (appearing later than the shoots of the season), slightly glandular, many-flowered; pod depressed, nearly smooth; pedicels recurved in fruit.—Hillsides, Marit. Prov.; common. May, June.

2. *K. glauca*, Ait. PALE LAUREL. Branchlets 2-edged; leaves opposite, nearly sessile, oblong, white-glaucous beneath, with revolute

margins; corymbs terminal, few-flowered, smooth; bracts large; flowers $\frac{1}{2}$ ' broad, lilac-purple; pod ovoid, smooth.—Cold peat-bogs and mountains, Newf., Pacific, and northward. May, June.—Straggling, about 1° high.

7. RHODODENDRON, L. ROSE BAY, AZALEA, etc.

Flowers almost always 5-merous. Calyx mostly small or minute. Corolla various (but not contracted at the orifice), lobed or cleft, or even parted, often somewhat irregular. Stamens sometimes as few as the corolla-lobes, more commonly twice as many, usually declined; anther-cells opening by a round terminal pore. Capsule 5-celled, 5-valved, many-seeded. Seeds scale-like.—Shrubs or small trees, of diverse habit and character, with chiefly alternate entire leaves, and large and showy flowers in umbelled clusters from large scaly-bracted terminal buds. (*Ροδόδενδρον*, *rose-tree*; the ancient name.)

§1. AZALEA. *Leaves deciduous, glandular-mucronate; stamens (5 to 10) and style more or less exserted and declined.*

* *Flower-buds of rather few and early caducous scales; corolla irregular, with short or hardly any tube, anteriorly divided to the base; the limb equalling the 10 stamens and style.*

1. *R. Rhodora*, Don. Young parts sparingly strigose-hairy (1–2° high); leaves oblong, pale, more or less pubescent; corolla hardly 1' long, purplish-rose-color, bilabiate, with the posterior lip 3-lobed, the anterior of 2 oblong-linear and recurving nearly or quite distinct petals. (*Rhodora Canadensis*, L.)—Cool bogs, Lab. and Newf. to Q.

8. LEDUM, L. LABRADOR TEA.

Calyx 5-toothed, very small. Corolla of 5 obovate and spreading distinct petals. Stamens 5–10; anthers opening by terminal pores. Capsule 5-celled, splitting from the base upward, many-seeded; placenta borne on the summit of the columella.—Low shrubs, with the alternate entire leaves clothed with rusty wool underneath, persistent, the margins revolute; herbage slightly fragrant when bruised. Flowers white, small, in terminal umbel-like clusters from large scaly buds; bracts or scales thin and caducous. (*Λῆδον*, the ancient Greek name of the Cistus.)

1. **L. latifolium**, Ait. Erect, 1-3° high; leaves oblong or linear-oblong (1-2' long), mostly $\frac{1}{2}$ ' wide, very obtuse; stamens 5-7; capsule oblong, acutish.—Lab. to Pac., and northward, in cold bogs and mountain woods.

9. CHIMAPHILA, Pursh. PIPSISSEWA.

Petals 5, concave, orbicular, widely spreading. Stamens 10; filaments enlarged and hairy in the middle; anthers as in *Pyrola*, but more or less conspicuously 2-horned. Style very short, inversely conical, nearly immersed in the depressed summit of the globular ovary; stigma broad and orbicular, disk-shaped, the border 5-crenate. Capsule, etc., as in *Pyrola*, but splitting from the apex downward, the edges of the valves not woolly.—Low, nearly herbaceous plants, with long running underground shoots, and evergreen thick and shining leaves, somewhat whorled or scattered along the short ascending stems; the fragrant (white or purplish) flowers corymbed or umbelled on a terminal peduncle. (Name from *χειμα*, *winter*, and *φιλέω*, *to love*, in allusion to one of the popular names, viz., *Wintergreen*.)

1. **C. umbellata**, Nutt. PRINCE'S PINE. PIPSISSEWA. Leafy, 4-10' high; leaves wedge-lanceolate, sharply serrate, not spotted; peduncles 4-7-flowered; petals flesh-color; anthers violet.—Dry woods, Nova Scotia west to the Pacific. June. (Eu.)

10. MONESES, Salisb. ONE-FLOWERED PYROLA.

Petals 5, widely spreading, orbicular. Filaments awl-shaped, naked; anthers as in *Pyrola*, but conspicuously 2-horned. Style straight, exserted; stigma large, peltate, with 5 narrow and conspicuous radiating lobes. Valves of the capsule naked. (Flowers occasionally tetramerous.) Scape 1-flowered. Otherwise as *Pyrola*; intermediate between it and *Chimaphila*. (Name formed of *μόνος*, *single*, and *ἡσυχία*, *delight*, from the pretty solitary flower.)

1. **M. grandiflora**, Salisb. A small perennial, with the rounded and veiny serrate thin leaves (6-9" long) clustered at the ascending apex of creeping subterranean shoots; the 1-2-bracted scape (2-4' high) bearing a white or rose-colored terminal flower 6" wide. (*M. uniflora*, Gray.)—Deep cold woods, Labrador westward. June. (Eu.)

11. **PYROLA**, Tourn. WINTERGREEN. SHIN-LEAF.

Calyx 5-parted, persistent. Petals 5, concave and more or less converging, deciduous. Stamens 10; filaments awl-shaped, naked; anthers extrorse in the bud, but in the flower inverted by the inflexion of the apex of the filament, more or less 4-celled, opening by a pair of pores at the blunt or somewhat 2-horned base (by inversion the apparent apex). Style generally long; stigma 5-lobed or 5-rayed. Capsule depressed-globose, 5-lobed, 5-celled, 5-valved from the base upward (loculicidal); the valves cobwebby on the edges. Seeds minute, innumerable, resembling sawdust, with a very loose cellular-reticulated coat.—Low and smooth perennial herbs, with running subterranean shoots, bearing a cluster of rounded petioled evergreen root-leaves, and a simple raceme of nodding flowers, on an upright more or less scaly-bracted scape. (Name a diminutive of *Pyrus*, the Pear-tree, from some fancied resemblance in the foliage.)

* *Style straight, much narrower than the peltate 5-rayed stigma; petals and stamens erect and connivent; anthers not narrowed below the openings.*

1. **P. minor**, L. Scape 5–10' high; leaves roundish, slightly crenulate, thickish, mostly longer than the margined petiole; flowers small, crowded, white or rose-color; calyx-lobes triangular-ovate, very much shorter than the nearly globose corolla; style short and included.—Cold woods, Lab., White Mts., L. Superior and northward.

2. **P. secunda**, L. Subcaulescent, 3–6' high; leaves ovate, thin, longer than the petiole, scattered, finely serrate; racemes dense and spike-like, the numerous small (greenish-white) flowers all turned to one side, scarcely nodding; calyx-lobes ovate, very much shorter than the oblong-oval petals; style long, exserted.—Rich woods, Lab. to Pac., and far northward. July. (Eu.)

Var. **pumila**, Gray, is a smaller form, with rounded leaves 6" or little more in diameter, and 3–8 flowered scape.—High peat-bogs, Lab., west and northward. July, August.

** *Style strongly declined, the apex curved upward, longer than the connivent or spreading petals; stigma much narrower than the*

truncate excavated ring-like apex of the style ; anthers contracted below the openings, forming a short neck ; leaves denticulate or entire.

† *Petals and leaves orbicular to oblong, very obtuse.*

3. **P. chlorantha**, Swartz. *Leaves small (1' long), roundish, thick, dull, shorter than the petiole ; scape few-flowered, naked (5-8' high) ; calyx-lobes roundish-ovate, very short ; the elliptical petals converging (greenish-white) ; anther-cells contracted into a distinct neck ; style little exserted.*—Open woods, Lab., westward. June, July.

4. **P. elliptica**, Nutt. SHIN-LEAF. *Leaves thin and dull, elliptical or obovate-oval, longer than the margined petiole ; raceme many-flowered ; calyx-lobes ovate, acute, not one-fourth the length of the obovate rather spreading (greenish-white) petals ; anther-cells blunt.*—Rich woods, N. S., westward. June.

5. **P. rotundifolia**, L. *Leaves orbicular, thick, shining, usually shorter than the petiole ; scape many-bracted (6-12' high) ; raceme elongated, many-flowered ; calyx-lobes lanceolate or oblong-lanceolate, acutish, with somewhat spreading tips, one half or one third the length of the roundish-obovate rather spreading (chiefly white) petals ; anther-cells nearly blunt.*—Damp or sandy woods, throughout the continent.

12. MONOTROPA, L. INDIAN PIPE. PINE-SAP.

Calyx of 2-5 lanceolate bract-like scales, deciduous. Corolla of 4 or 5 separate erect spatulate or wedge-shaped scale-like petals, which are gibbous or saccate at the base, and tardily deciduous. Stamens 8 or 10 ; filaments awl-shaped ; anthers kidney-shaped, becoming 1-celled, opening across the top. Style columnar ; stigma disk-like, 4-5-rayed. Capsule ovoid, 8-10-grooved, 4-5-celled, loculicidal ; the very thick placentæ covered with innumerable minute seeds, which have a very loose coat.—Low and fleshy herbs, tawny, reddish, or white, parasitic on roots, or growing on decomposing vegetable matter like a Fungus ; the clustered stems springing from a ball of matted fibrous rootlets, furnished with scales or bracts in place of leaves, 1-several-flowered ; the summit at first nodding, in fruit erect. (Name composed of *μόνος*, *one*, and *τρόπος*, *turn*, from the summit of the stem turned to one side.)

§ 1. **MONOTROPA** proper. *Plant inodorous, 1-flowered; calyx of 2-4 irregular scales or bracts; anthers transverse, opening equally by 2 chinks; style short and thick.*

1. **M. uniflora**, L. **INDIAN PIPE. CORPSE-PLANT.** Smooth, waxy-white (turning blackish in drying, 3-8' high); stigma naked. —Dark and rich woods, nearly throughout the continent. June-August. (Asia.)

§ 2. **HYPOPITYS**. *Plant commonly fragrant; flowers several in a scaly raceme; the terminal one usually 5-merous, the rest 3-4-merous; bract-like sepals mostly as many as the petals; anthers opening by a continuous line into 2 very unequal valves; style longer than the ovary, hollow.*

2. **M. Hypopitys**, L. **PINE-SAP. FALSE BEECH-DROPS.** Somewhat pubescent or downy, tawny, whitish, or reddish (4-12' high); pod globular or oval; stigma ciliate. —Oak and pine woods, from Ant. and N. S. west to Ont. June-August. (Eu.)

ORDER 42. PRIMULACEÆ (PRIMROSE FAMILY).

Herbs, with simple leaves, and regular perfect flowers, the stamens as many as the lobes of the monopetalous (rarely polypetalous) corolla and inserted opposite them (on the tube or base), and a 1-celled ovary with a central free placenta rising from the base, bearing several or many seeds. —Calyx free from the ovary, or in Samolus partly coherent. (Corolla none in Glaux.) Stamens 4 or 5, rarely 6 or 8. Style and stigma one. Seeds with a small embryo in fleshy albumen. Ovules amphitropous.

Tribe I. PRIMULÆ. Ovary wholly free.

* Stemless; leaves all in a cluster from the root; capsule dehiscent by valves or teeth.

1. **Primula**. Corolla funnel-form or salver-shaped, open at the throat. Stamens included.

** Stems leafy; corolla rotate; leaves entire.

† Capsule dehiscent vertically by valves or irregularly, mostly globose.

2. **Trientalis**. Corolla mostly 7-parted. Stem leafy only at the summit.

3. **Steironema**. Corolla 5-parted. Five slender staminodia between the fertile stamens.

4. **Lysimachia**. Corolla 5-6-parted or 5-6-petalled. Staminodia none. Leaves dotted.

1. PRIMULA, L. PRIMROSE. COWSLIP.

Calyx tubular, angled, 5-cleft. Corolla salver-shaped, enlarging above the insertion of the stamens; the 5 lobes often notched or

inversely heart-shaped. Stamens 5, included. Capsule many-seeded, splitting at the top into 5 valves or 10 teeth.—Low perennial herbs, producing a tuft of veiny leaves at the root, and simple scapes, bearing the flowers in an umbel. (Name a diminutive of *primus*, from the flowering of the true Primrose in early spring.)

1. **P. farinosa**, L. BIRD'S-EYE PRIMROSE. Scape 3-10' high; leaves elliptical or obovate-lanceolate, denticulate, *the lower side and the 3-20-flowered involucre, etc., covered with a white mealiness*, at least when young; corolla pale lilac with a yellow eye.—Marit. Prov. to R. Mts. June, July. (Eu., Asia.)

2. **TRIENTALIS**, L. CHICKWEED-WINTERGREEN.

Calyx mostly 7-parted; the divisions linear-lanceolate, pointed. Corolla mostly 7-parted, spreading, flat, without tube. Filaments slender, united in a ring at the base; anthers oblong, revolute after flowering. Capsule few-seeded.—Low and smooth perennials, with simple erect stems, bearing a few alternate usually minute and scale-like leaves below, and a whorl of thin veiny leaves at the summit. Peduncles one or more, very slender, bearing a delicate white and star-shaped flower. (A Latin name, meaning the third part of a foot, alluding to the height of the plant.)

1. **T. Americana**, Pursh. STAR-FLOWER. Spreading by very slender elongated rootstocks; leaves elongated-lanceolate, tapering to both ends, petals finely pointed.—Damp cold woods, from Lab. to Sask. May.—Rootstocks often 1-2° long (*Hitchings*).

3. **STEIRONEMA**, Raf.

Calyx 5-parted. Corolla rotate, with no proper tube, deeply 5-parted, the sinuses rounded; divisions ovate, cuspidate-pointed, erose-denticulate above, each separately involute around its stamen. Filaments distinct or nearly so on the ring at base of corolla, alternating with 5 subulate staminodia; anthers linear. Capsule 10-20-seeded.—Leafy-stemmed perennials, glabrous except the ciliate petioles, not punctate, the leaves all opposite, but mostly in seeming whorls on the flowering branches. Peduncles slender, axillary, bearing yellow flowers. (From *στεῖρος*, *sterile*, and *νήμα*, *thread*, referring to the staminodia.)

1. **S. ciliatum**, Raf. Stem erect (2-4° high); leaves lanceolate-

ovate (2-6' long), tapering to an acute point, rounded or heart-shaped at base, all on long and fringed petioles; corolla longer than the calyx. (*Lysimachia ciliata*, L.)—Low grounds and thickets, common. July.

2. *S. lanceolatum*, Gray. Stem erect (10'-2° high); leaves lanceolate, varying to oblong and linear, narrowed into a short margined petiole or tapering base, or the lowest short and broad on long petioles. (*Lysimachia lanceolata*, Walt.)—Low grounds and thickets, Ont.

4. *LYSIMACHIA*, Tourn. LOOSESTRIFE.

Calyx 5-6-parted. Corolla rotate, the divisions entire, convolute in bud. Filaments commonly monadelphous at base; anthers oblong or oval; staminodia none. Capsule few-several-seeded.—Leafy-stemmed perennials, with herbage commonly glandular-dotted. (In honor of King *Lysimachus*, or from *λύσις*, a release from, and *μάχη*, strife.)

§ 1. *LYSIMACHIA* proper. Corolla yellow, rotate, and very deeply parted, and with no teeth between the lobes; stamens more or less monadelphous, often unequal; leaves opposite or whorled, or some abnormally alternate.

* Flowers (small) in a virgate terminal raceme or in the upper axils; corolla dark-dotted or streaked; filaments conspicuously monadelphous, unequal.

1. *L. quadrifolia*, L. Somewhat hairy; stem simple (1-2° high); leaves whorled in fours or fives (sometimes in twos, threes, or sixes, rarely only opposite or partly alternate), ovate-lanceolate; flowers on long capillary peduncles from the axils of the leaves; lobes of the corolla ovate-oblong.—Moist or sandy soil, N. B. to Ont. June.

2. *L. stricta*, Ait. Stems 1-2° high, often bearing oblong or moniliform bulblets in the axils; smooth, at length branched, very leafy; leaves opposite or rarely alternate, lanceolate, acute at each end; flowers on slender pedicels in a long raceme (5-12'), leafy at base; lobes of the corolla lance-oblong.—Low grounds, Newf. to Sask. June-Aug.

** Flowers (rather large) solitary in the axils of ordinary leaves; corolla not dark-dotted nor streaked; filaments slightly monadelphous.

3. *L. nummularia*, L. MONEYWORT. Smooth; stems trailing and creeping; leaves roundish, small, short-petioled; peduncles axillary, 1-flowered; divisions of the corolla broadly ovate, obtuse, longer than the lance-ovate calyx-lobes and stamens.—Escaped from gardens into damp ground, Newf. to Ont. July–Sept. (Nat. from Eu.)

§ 2. *NAUMBURGIA*. Corolla very deeply 5- (or 6–7) parted into linear divisions (somewhat purplish-dotted), with a small tooth in each sinus; filaments distinct, equal; leaves opposite, the lowest scale-like.

4. *L. thyrsiflora*, L. TUFTED LOOSESTRIFE. Smooth; stem simple (1–2° high); all but the lower leaves lanceolate, the axils of one or two middle pairs bearing short-peduncled head-like or spike-like clusters of small light yellow flowers.—Cold swamps, N. S. westward. June, July. (Eu.)

ORDER 43. APOCYNACEÆ (DOGBANE FAMILY).

Plants almost all with milky acrid juice, entire (chiefly opposite) leaves without stipules, regular 5-merous and 5-androus flowers; the 5 lobes of the corolla convolute and twisted in the bud; the filaments distinct, inserted on the corolla, and the pollen granular; calyx free from the two ovaries, which (in our genera) are distinct (forming follicles), though their styles or stigmas are united into one.—Seeds amphitropous or anatropous, with a large straight embryo in sparing albumen, often bearing a tuft of down (comose).—Chiefly a tropical family (of acrid-poisonous plants), represented in gardens by the Oleander and Periwinkle.

1. *Apocynum*. Seeds comose. Corolla bell-shaped, appendaged within. Filaments short, broad and flat. Calyx not glandular. Leaves opposite.

1. APOCYNUM, Tourn. DOGBANE. INDIAN HEMP.

Calyx 5-parted, the lobes acute. Corolla bell-shaped, 5-cleft, bearing 5 triangular appendages below the throat opposite the lobes. Stamens 5, on the very base of the corolla; filaments flat, shorter than the arrow-shaped anthers, which converge around the stigma, and are slightly adherent to it. Style none; stigma large, ovoid, slightly 2-lobed. Fruit of 2 long (2–7') and slender follicles. Seeds comose, with a tuft of long silky down at the apex.—Peren-

nial herbs, with upright branching stems, opposite mucronate-pointed leaves, a tough fibrous bark, and small and pale cymose flowers on short pedicels. (Ancient name of the Dogbane, composed of *ἀπὸ*, from, and *κῖων*, a dog.)

1. **A. androsæmifolium**, L. SPREADING DOGBANE. Smooth, or rarely soft-tomentose, branched above; branches divergently forking; leaves ovate, distinctly petioled; cymes loose, spreading, mostly longer than the leaves; corolla (pale rose-color, 4" broad) open-bell-shaped, with revolute lobes, the tube much longer than the ovate pointed divisions of the calyx.—Borders of thickets; common. June, July.

2. **A. cannabinum**, L. INDIAN HEMP. Glabrous or more or less soft pubescent; stem and branches upright or ascending (2–3° high), terminated by erect and close many-flowered cymes, which are usually shorter than the leaves; leaves from oval to oblong and even lanceolate, short-petioled or sessile, with rounded or obscurely cordate base; corolla (greenish-white) with nearly erect lobes, the tube not longer than the lanceolate divisions of the calyx.—Moist grounds and banks of streams; common. Very variable. July, August.

ORDER 44. ASCLEPIADACEÆ (MILKWEED FAMILY).

Plants with milky juice, and opposite or whorled (rarely scattered) entire leaves; the follicular pods, seeds, anthers (connected with the stigma), sensible properties, etc., just as in the last family, from which they differ in the commonly valvate corolla, and in the singular connection of the anthers with the stigma, the cohesion of the pollen into wax-like or granular masses (pollinia), etc., as explained under the typical genus *Asclepias*.

Tribe I. CYNANCHEÆ. Anthers tipped with an inflexed or sometimes erect scarious membrane, the cells lower than the top of the stigma; pollinia suspended.

*Stems erect or merely decumbent.

1. **Asclepias**. Corolla reflexed, deeply 5-parted. Crown of 5-hooded fleshy bodies with an incurved horn rising from the cavity of each hood. Leaves usually opposite.

1. ASCLEPIAS, L. MILKWEED. SILKWEED.

Calyx 5-parted, persistent; the divisions small, reflexed. Corolla deeply 5-parted; the divisions valvate in the bud, reflexed, deciduous. Crown of 5 hooded bodies seated on the tube of stamens,

each containing an incurved horn. Stamens 5, inserted on the base of the corolla; filaments united in a tube which encloses the pistil; anthers adherent to the stigma, each with 2 vertical cells, tipped with a membranaceous appendage, each cell containing a flattened pear-shaped and waxy pollen-mass; the two contiguous pollen-masses of adjacent anthers, forming pairs which hang by a slender prolongation of their summits from 5 cloven glands that grow on the angles of the stigma (extricated from the cells by insects, and directing copious pollen-tubes into the point where the stigma joins the apex of the style). Ovaries 2, tapering into very short styles; the large depressed 5-angled fleshy stigmatic disk common to the two. Follicles 2, one of them often abortive, soft, ovate or lanceolate. Seeds anatropous, flat, margined, bearing a tuft of long silky hairs (*coma*) at the hilum, downwardly imbricated all over the large placenta, which separates from the suture at maturity. Embryo large, with broad foliaceous cotyledons in thin albumen.—Perennial upright herbs, with thick and deep roots; peduncles terminal or lateral and between the usually opposite petioles, bearing simple many-flowered umbels, in summer. (The Greek name of *Æsculapius*, to whom the genus is dedicated.)

§ 1. *Corneous anther-wings broadest and usually angulate-truncate and salient at base; horn conspicuous.*

* *Flowers orange-color; leaves mostly scattered; juice not milky.*

1. **A. tuberosa**, L. BUTTERFLY-WEED. PLEURISY-ROOT. Roughish-hairy (1-2° high); stems erect or ascending, very leafy, branching at the summit, and bearing usually numerous umbels in a terminal corymb; leaves from linear to oblong-lanceolate, sessile or slightly petioled; divisions of the corolla oblong (greenish-orange); hoods narrowly oblong, bright orange scarcely longer than the nearly erect and slender awl-shaped horns; pods hoary, erect on deflexed pedicels.—Dry fields, common, Ont.

* * *Corolla bright red or purple; follicles naked, fusiform, erect on the deflexed pedicels (except in n. 2); leaves opposite, mostly broad.*

† *Flowers small; hoods 1" long, equalling the anthers; veins ascending.*

2. **A. incarnata**, L. SWAMP MILKWEED. Smooth, or nearly so, in the typical form, the stem with two downy lines above and on

the branches of the peduncles (2-3° high), very leafy; leaves oblong-lanceolate, acute or pointed, obtuse or obscurely heart-shaped at base; flowers rose-purple; hoods scarcely equalling the slender needle-pointed horn.—Swamps, common.

*** *Flowers greenish, yellowish, white, or merely purplish-tinged; leaves opposite or whorled, or the upper rarely scattered.*

† *Follicles echinate with soft spinous processes, densely tomentose large (3-5' long), ovate and acuminate, erect on deflexed pedicels; leaves large and broad, short petioled; umbels terminal and lateral.*

3. *A. Cornuti*, Decaisne. COMMON MILKWEED or SILKWEED.

Stem tall and stout, finely soft-pubescent; leaves oval-oblong (4-8' long), pale, minutely downy beneath, as well as the peduncles, etc.; corolla lobes dull purple to white, 3-4" long; hoods rather longer than the anthers, ovate, obtuse, with a tooth each side of the short, claw-like horn.—Rich ground, everywhere.

ORDER 45. GENTIANACEÆ (GENTIAN FAMILY).

Smooth herbs, with a colorless bitter juice, opposite and sessile entire and simple leaves (except in Tribe II) without stipules, regular flowers with the stamens as many as the lobes of the corolla, which are convolute (rarely imbricated and sometimes valvate) in the bud, a 1-celled ovary with 2 parietal placentæ, or nearly the whole inner face of the ovary ovuliferous; the fruit usually a 2-valved and septicidal many-seeded capsule.—Flowers solitary or cymose. Calyx persistent. Corolla mostly withering persistent; the stamens inserted on its tube. Seeds anatropous, with a minute embryo in fleshy albumen. (Bitter-tonic plants.)

SUB-ORDER I. *Gentianæ*. Leaves always simple and entire, sessile, never alternate. *Æstivation of corolla never valvate.*

* Lobes of corolla convolute in the bud.

† Style stout and persistent or none; anthers remaining straight.

1. *Gentiana*. Corolla funnel-form or bell-shaped, mostly plaited in the sinuses, without spurs or glands. Calyx 4-5-cleft.

2. *Halenia*. Corolla 4-5-cleft, campanulate, and 4-5-spurred at the base.

* * Lobes of corolla imbricate in the bud; no appendages.

SUB-ORDER II. Menyanthes. Leaves all alternate and mostly petioled, sometimes trifoliate or crenate. Estivation of corolla induplicate-valvate. Marsh or aquatic perennials.

3. Menyanthes. Corolla bearded inside. Leaves 3-foliate.

1. GENTIANA, Tourm. GENTIAN.

Calyx 4-5-cleft. Corolla 4-5-lobed, regular, usually with intermediate plaited folds, which bear appendages or teeth at the sinuses. Style short or none; stigmas 2, persistent. Capsule oblong, 2-valved; the innumerable seeds either borne on placenta at or near the sutures, or in most of our species covering nearly the whole inner face of the pod.—Flowers solitary or cymose, showy, in late summer and autumn. (Name from *Gentius*, king of Illyria, who used some species medicinally.)

§ 1. GENTIANELLA. Corolla (not rotate) destitute of extended pluits or lobes or teeth at the sinuses; root annual.

* (FRINGED GENTIANS.) Flowers large, solitary on long terminal peduncles, mostly 4-merous; corolla campanulate-funnel-form, its lobes usually fimbriate or erose, not crowned; a row of glands between the bases of the filaments. Autumn-flowering.

1. *G. crinita*, Froel. Stem 1-2° high; leaves lanceolate or ovate-lanceolate from a partly heart-shaped or rounded base; lobes of the 4-cleft calyx unequal, ovate and lanceolate, as long as the bell-shaped tube of the blue corolla (2' long), the lobes of which are wedge-obovate, and strongly fringed around the summit; ovary lanceolate.—Low grounds, Q. and Ont.

* * Flowers smaller, 4-5-merous; corolla somewhat funnel-form or salver-form, its lobes entire; peduncles short or none, terminal and lateral on the acute-angled stem.

2. *G. Amarella*, L. Stems 2-20' high; leaves lanceolate to narrowly oblong, or the lowest obovate-spatulate, the margins minutely scabrous; calyx-lobes (4-5) foliaceous, linear; corolla mostly blue, $\frac{1}{2}$ ' long or more, with a fimbriate crown at the base of the oblong acute lobes; capsule sessile.—Var. *acuta*, Hook. f. Calyx almost 5-parted; crown usually of fewer and sometimes very few setae.—Lab. to N. Vt. and N. Minn., west and northward.

§ 2. **PNEUMONANTHE.** *Corolla (funnel-form or salver-form) with thin-membranaceous toothed or lobed plaits in the sinuses; no crown nor glands; capsule stipitate; autumn-flowering perennials, the flowers large, sessile or short pedunculate and bibracteate.*

* *Anthers cohering in a ring on short tube; flowers in terminal and often axillary clusters.*

† *Calyx-lobes and bracts ciliolate-scabrous; seeds conspicuously winged; leaves rough-margined.*

3. **G. Andrewsii**, Griseb. **CLOSED G.** Stems upright, smooth; leaves ovate-lanceolate and lanceolate from a narrower base, gradually pointed; *calyx-lobes lanceolate to ovate, recurved, shorter than the top-shaped tube*, and much shorter than the more oblong and truncate mostly blue corolla, which is closed at the mouth, *its proper lobes obliterated*, the apparent lobes consisting of the broad fringe-toothed and notched appendages.—Moist ground, Q. and Ont. Corolla blue with white plaits, or sometimes all white.

2. **HALENIA**, Borkh. SPURRED GENTIAN.

Calyx 4-5-parted. Corolla short bell-shaped, 4-5-cleft, without folds or fringe, prolonged at the base underneath the erect lobes into spurs, which are glandular in the bottom. Stigmas 2, sessile, persistent on the oblong flattish capsule. Seeds rather numerous, oblong.—Small and upright herbs, with yellowish or purplish panicle-cymose flowers. (Named for *John Halen*, a German botanist.)

1. **H. deflexa**, Grisebach. Leafy annual or biennial (9-18' high), simple or branched above; leaves 3-5-nerved, the lowest oblong-spatulate and petioled, the others oblong-lanceolate, acute; spurs cylindrical, obtuse, curved, descending, half the length of the acutely 4-lobed corolla.—Damp and cool woods, Lab. west, and northward.

3. **MENYANTHES**, Tourn. BUCKBEAN.

Calyx 5-parted. Corolla short funnel-form, 5-cleft, deciduous, the whole upper surface white-bearded, valvate in the bud with the margins turned inward. Style slender, persistent; stigma 2-lobed. Capsule bursting somewhat irregularly, many-seeded. Seed-coat hard, smooth, and shining.—A perennial alternate-leaved herb, with

a thickish creeping rootstock, sheathed by the membranous bases of the long petioles, which bear 3 oval or oblong leaflets; the flowers racemed on the naked scape (1° high), white or slightly reddish. (The ancient Theophrastian name, probably from μήν, month, and άνθος, a flower, some say from its flowering for about that time.)

1. *M. trifoliata*, L.—Bogs, Newf. and far north and westward. May, June. (Eu., Asia.)

ORDER 46. HYDROPHYLLACEÆ (WATERLEAF FAMILY).

Herbs, commonly hairy, with mostly alternate leaves, regular 5-merous and 5-androus flowers, in aspect between the foregoing and the next order; but the ovary entire and 1-celled with 2 parietal 4-many-ovuled placentæ, or rarely 2-celled by the union of the placentæ in the axis; style 2-cleft, or 2 separate styles; fruit a 2-valved 4-many-seeded capsule.—Seeds mostly reticulated or pitted. Embryo small in copious albumen. Flowers chiefly blue or white, in one-sided cymes or false racemes, which are mostly bractless and coiled from the apex when young, as in the Borage Family. A small order of plants of no marked properties; some cultivated for ornament.

Tribe I. HYDROPHYLLÆ. Ovary and capsule 1-celled. Seeds pitted or reticulated; albumen cartilaginous. Leaves cut-toothed, lobed or pinnate. Style 2-cleft.

*Ovary lined with the dilated and fleshy placentæ, which enclose the ovules and seeds (in our plants only 4) like an inner pericarp.

1. *Hydrophyllum*. Stamens exserted; anthers linear. Calyx unchanged in fruit.

1. HYDROPHYLLUM, Tourn. WATERLEAF.

Calyx 5-parted, sometimes with a small appendage in each sinus, early open in the bud. Corolla bell-shaped, 5-cleft; the lobes convolute in the bud; the tube furnished with 5 longitudinal linear appendages opposite the lobes, which cohere by their middle, while their edges are folded inward, forming a nectariferous groove. Stamens and style mostly exserted; filaments more or less bearded; anthers linear. Ovary bristly-hairy (as is usual in the family); the 2 fleshy placentæ expanded so as to line the cell and nearly fill the cavity, soon free from the walls except at the top and bottom, each bearing a pair of ovules on the inner face. Capsule ripening 1-4 seeds, spherical.—Perennials, with petioled ample leaves, and white or pale blue cymose-clustered flowers. (Name formed of ύδωρ, water, and φύλλον, leaf; of no obvious application.)

* *Calyx with minute if any appendages; rootstocks creeping, scaly-toothed.*

2. **H. Virginicum**, L. *Smoothish* (1-2° high); *leaves pinnately divided; the divisions 5-7, ovate-lanceolate or oblong, pointed, sharply cut-toothed, the lowest mostly 2-parted, the uppermost confluent; peduncles longer than the petioles of the upper leaves, forked; calyx-lobes narrowly linear, bristly-ciliate; flowers 3" long; anthers oblong-linear.*—Rich woods, Q. westward. June-Aug.

ORDER 47. BORRAGINACEÆ (BORAGE FAMILY).

Chiefly rough-hairy herbs, with alternate entire leaves, and symmetrical flowers with a 5-parted calyx, a regular 5-lobed corolla, 5 stamens inserted on its tube, a single style and a usually deeply 4-lobed ovary (as in Labiata), forming in fruit 4 seed-like 1-seeded nutlets, or separating into two 2-seeded or four 1-seeded nutlets.—Albumen none. Cotyledons plano-convex; radicle pointing to the apex of the fruit. Stigmas 1 or 2. Calyx valvate, the corolla imbricated (in *Myosotis convolute*) in the bud. Flowers mostly on one side of the branches of a reduced cyme, imitating a spike or raceme, which is rolled up from the end, and straightens as the blossoms expand (circinate or scorpioid), often bractless. (A rather large family of innocent, mucilaginous, and slightly bitter plants; the roots of some species yielding a red dye.)

Tribe I. BORRAGINÆ. Ovary deeply 4-parted, forming as many separate 1-seeded nutlets in fruit; style rising from the centre between them.

* Corolla and stamens regular.

† Nutlets armed, attached laterally; corolla short, closed by 5 scales.

1. **Cynoglossum.** Nutlets horizontally radiate, much produced downward, covered with barbed prickles.
2. **Echinosperrum.** Nutlets erect or ascending, the margin or back armed with barbed prickles.

†† Nutlets unarmed, attached by the very base, ovoid, mostly smooth and shining.

‡ Scar flat, small. Racemes leafy-bracteate, except in n. 4.

3. **Myosotis.** Corolla short salver-form, its lobes rounded, and throat crested.
4. **Lithospermum.** Corolla salver-form to funnel-form, its rounded lobes spreading; the throat either naked or with low crests.

1. CYNOGLOSSUM, Tourn. HOUND'S-TONGUE.

Corolla funnel-form, the tube about equalling the 5-parted calyx, and throat closed with 5 obtuse scales; lobes rounded. Stamens

included. Nutlets depressed or convex, oblique, fixed near the apex to the base of the style, roughened all over with short barbed or hooked prickles.—Coarse herbs, with a strong scent and petioled lower leaves; the mostly panicled (so-called) racemes naked above, usually bracted at base. Fl. all summer. (Name from *κίων*, a dog, and *γλῶσσα*, tongue; from the shape and texture of the leaves.)

1. **C. officinale**, L. COMMON HOUND'S-TONGUE. Biennial; *clothed with short soft hairs, leafy*, panicled above; upper leaves lanceolate, closely sessile by a rounded or slightly heart-shaped base; racemes nearly bractless; *corolla reddish-purple* (rarely white); nutlets flat on the broad upper face, somewhat margined.—Waste ground and pastures; a familiar and troublesome weed; the large nutlets adhering to the fleece of sheep, etc. (Nat. from Eu.)

2. **C. Virginicum**, L. WILD COMFREY. Perennial; *roughish with spreading bristly hairs*; stem simple, *few-leaved* (2–3° high), stem-leaves lanceolate-oblong, clasping by a deep heart-shaped base; *racemes few and corymbed, raised on long naked peduncles*, bractless; *corolla pale blue*; nutlets strongly convex.—Open woods; N. B. to Sask.

2. ECHINOSPERMUM, Lehm. STICKSEED.

Corolla salver-form, short, imbricated in the bud, the throat closed with 5 short scales. Stamens included. Nutlets erect, fixed laterally to the base of the style or central column, triangular or compressed, the back armed all over or with 1–3 marginal rows of prickles which are barbed at the apex, otherwise naked.—Rough-hairy and grayish herbs, with small blue to whitish flowers in racemes or spikes; ours annuals or biennials, flowering all summer. (Name compounded of *ἐχίνο*, a hedgehog, and *σπέρμα*, seed.)

* *Racemes panicled, leafy-bracteate at base; slender pedicels recurved or deflexed in fruit; calyx-lobes short, at length reflexed; biennial, not hispid.*

1. **E. Virginicum**, Lehm. BEGGAR'S LICE. Stem 2–4° high; radical leaves round-ovate or cordate, slender-petioled; cauline (3–8' long) ovate-oblong to oblong-lanceolate, acuminate at both ends; loosely paniculate racemes divaricate; pedicel and flower each a line long: *nutlets of the globose fruit equally short-glochidiate*

over the whole back. (*Cynoglossum Morisoni*, DC.)—Borders of woods and thickets, Q. to Sask.

3. **MYOSOTIS**, Dill. SCORPION-GRASS. FORGET-ME-NOT.

Corolla salver-form, the tube about the length of the 5-toothed or 5-cleft calyx, the throat with 5 small and blunt arching appendages opposite the rounded lobes; the latter convolute in the bud! Stamens included, on very short filaments. Nutlets smooth, compressed, fixed at the base; the scar minute.—Low and mostly soft-hairy herbs, with entire leaves, those of the stem sessile, and with small flowers in naked racemes, which are entirely bractless, or occasionally with one or two small leaves next the base, prolonged and straightened in fruit. Flowering through the season. (Name composed of *μῖς*, mouse, and *οἶς*, ὠτίς, ear, in allusion to the aspect of the short and soft leaves in some species; one popular name is MOUSE-EAR.)

* *Calyx open in fruit, its hairs appressed, none of them hooked or glandular.*

1. **M. palustris**, Withering. TRUE FORGET-ME-NOT. Perennial; stems ascending from an oblique creeping base (9-20' high), loosely branched, smoothish; leaves rough-pubescent, oblong-lanceolate or linear-oblong; calyx-lobes much shorter than its tube; limb of corolla 3 or 4 lines broad, sky-blue with a yellow eye.—In wet ground, probably only escaped from cultivation. (Nat. from Eu.)

2. **M. laxa**, Lehm. Perennial from filiform subterranean shoots; stems very slender, decumbent; pubescence all appressed; leaves lanceolate-oblong or somewhat spatulate; calyx-lobes as long as its tube; limb of corolla 2 or 3" broad, paler blue. (*M. palustris*, var. *laxa*, Gray.)—In water and wet ground, Newf. to Ont. (Eu.)

4. **LITHOSPERMUM**, Tourn. GROMWELL. PUCCOON.

Corolla funnel-form, or sometimes salver-shaped; the open throat naked, or with a more or less evident transverse fold or scale-like appendage opposite each lobe; the spreading limb 5-cleft, its lobes rounded. Anthers oblong, almost sessile, included. Nutlets ovate, smooth or roughened, mostly bony or stony, fixed by the base; scar nearly flat.—Herbs, with thickish and commonly red roots and sessile leaves; flowers solitary and as if axillary, or spiked and

leafy-bracted, sometimes dimorphous as to insertion of stamens and length of style. (Name formed of *λίθος*, stone, and *σπέρμα*, seed, from the hard nutlets.)

§ 1. *Nutlets tubercled or rough-wrinkled and pitted, gray and dull; throat of the (nearly white) corolla destitute of any evident folds or appendages.*

1. **L. arvense**, L. CORN GROMWELL. Minutely rough-hoary. annual or biennial; stems erect (6–12' high); leaves lanceolate or linear, veinless; corolla scarcely longer than the calyx.—Sandy banks and roadsides, Q. and Ont. May–August. (Nat. from Eu.)

§ 2. *Nutlets smooth and shining, white like ivory; corolla greenish-white or pale-yellow, small, with 5 distinct pubescent scales in the throat; perennial.*

2. **L. officinale**, L. COMMON GROMWELL. Much branched above, erect (1–2° high); leaves thinnish, broadly lanceolate, acute, with a few distinct veins, rough above, soft-pubescent beneath; corolla exceeding the calyx.—Roadsides, Q. and Ont. (Nat. from Eu.)

ORDER 48. CONVULVULACEÆ (CONVOLVULUS FAMILY).

Chiefly twining or trailing herbs, often with some milky juice, with alternate leaves (or scales) and regular 5-androus flowers; a calyx of 5 imbricated sepals; a 5-plaited or 5-lobed corolla convolute or twisted in the bud (imbricate in n. 3); a 2-celled (rarely 3-celled) ovary (or in one tribe 2 separate pistils), with a pair of erect ovules in each cell, the cells sometimes doubled by a false partition between the seeds, so becoming 4-celled; the embryo large, curved or coiled in mucilaginous albumen.—Fruit a globular 2–6-seeded capsule. Flowers mostly showy, on axillary peduncles; pedicels articulated, often 2-bracted. (Many are cultivated for ornament, and one, the Sweet Potato, for its edible farinaceous roots.)

Tribe I. CONVULVULÆ. Ovary entire. Leafy plants, mostly twiners.

1. **Ipomœa**. Style undivided, with stigma capitate or 2–3-globose.

2. **Convolvulus**. Style undivided or 2-cleft only at apex; stigmas 2, linear-filiform to subulate or ovate.

Tribe II. CUSCUTÆ. Ovary entire. Leafless parasitic twining herbs, never green. Embryo filiform, coiled, without cotyledons.

3. **Cuscuta**. The only genus of the group.

1. **IPOMŒA**, L. MORNING GLORY.

Calyx not bracteate at base, but the outer sepals commonly larger. Corolla salver-form or funnel-form to nearly campanulate; the limb entire or slightly lobed. Style undivided, terminated by a single capitate or 2-3-globose stigma. Capsule globular, 4-6- (by abortion fewer) seeded, 2-4-valved. (Name, according to Linnæus, from *ἵψ*, a Bindweed, and *ῥυμιος*, like; but *ἵψ* is a worm.)

§ 1. **IPOMŒA** proper. Corolla funnel-form or nearly campanulate, contorted in the bud; stamens and style not exerted.

* (MORNING GLORY.) Lobes of stigma and cells 3, sepals long and narrow, attenuate upward, mostly hirsute below; corolla purple, blue, and white.

1. **I. purpurea**. Lam. COMMON MORNING-GLORY. Annual; stems retrorsely hairy; leaves heart-shaped, acuminate, entire; peduncles long, umbellately 3-5-flowered; calyx bristly-hairy below; corolla funnel-form (2' long) purple, varying to white.—Escaped in cultivated grounds. (Trop. Amer.)

2. **CONVOLVULUS**, Tourn. BINDWEED.

Corolla funnel-form to campanulate. Stamens included. Style undivided or 2-cleft only at the apex; stigmas 2, linear-filiform to subulate or ovate. Capsule globose, 2-celled, or imperfectly 4-celled by spurious partitions between the 2 seeds, or by abortion 1-celled, mostly 2-4-valved.—Herbs or somewhat shrubby plants, either twining, erect, or prostrate. (Name from *convolvere*, to entwine.)

§ 1. **CALYSTEGIA**. Stigmas oval to oblong; calyx enclosed in 2 broad leafy bracts.

1. **C. sepium**, L. HEDGE BINDWEED. Glabrous, or more or less pubescent; stem twining or sometimes trailing extensively; leaves triangular-halberd-shaped or arrow-shaped, acute or pointed, the basal lobes obliquely truncate and often somewhat toothed or sinuate-lobed; peduncles 4-angled; bracts commonly acute; corolla white or tinged with rose-color (1½ to 2' long). (*Calystegia sepium*, R. Br.)—Moist alluvial soil, or along streams. (Eu., etc.)

Var. **Americanus**, Sims. Glabrous; corolla pink or rose-purple; bracts obtuse. (*C. sepium* of Am. authors mainly.)—Common, across the continent.

§ 2. *Stigmas filiform*; no bracts at or near the base of the calyx.

2. *C. arvensis*, L. BINDWEED. Perennial; stem procumbent or twining, and low; leaves ovate-oblong, arrow-shaped, with the lobes at the base acute; peduncles mostly 1-flowered; bracts minute, remote; corolla (9" long) white or tinged with reddish.—Old fields, N. S. to Ont. (Eu.)

3. CUSCUTA, Tourn. DODDER.

Calyx 5- (rarely 4) cleft, or of 5 sepals. Corolla globular-urn-shaped, bell-shaped, or short-tubular, the spreading border 5- (rarely 4) cleft, imbricate. Stamens with a scale-like often fringed appendage at base. Ovary 2-celled 4-ovuled; styles distinct, or rarely united. Capsule mostly 4-seeded. Embryo thread-shaped, spirally coiled in the rather fleshy albumen, destitute of cotyledons; sometimes with a few alternate scales (belonging to the plumule); germination occurring in the soil.—Leafless annual herbs, with thread-like yellowish or reddish stems, bearing a few minute scales in place of leaves; on rising from the ground becoming entirely parasitic on the bark of herbs and shrubs on which they twine, and to which they adhere by means of suckers developed on the surface in contact. Flowers small, cymose-clustered, mostly white; usually produced late in summer and in autumn. (Name supposed to be of Arabic derivation.)

§ 1. *Stigmas capitate*; capsule indehiscent.

* *Calyx gamosepalous*; ovary and capsule pointed, the latter enveloped or capped by the marcescent corolla; flowers in loose panicked cymes.

† *Corolla-lobes obtuse, spreading.*

1. *C. Gronovii*, Willd. Stems coarse, often climbing high; corolla-lobes mostly shorter than the deeply campanulate tube; scales copiously fringed; capsule globose, umbonate.—Wet shady places, N. S. to L. of W. The commonest of our species. Flowers very variable in size and compactness of clusters.

ORDER 49. SOLANACEÆ (NIGHTSHADE FAMILY).

Herbs (or rarely shrubs), with colorless juice and alternate leaves, regular 5-merous and 5-androus flowers, on bractless pedicels; the

corolla imbricate or valvate in the bud, and mostly plaited; the fruit a 2-celled (rarely 3-5-celled) many-seeded capsule or berry.—Seeds campylotropous or amphitropous. Embryo mostly slender and curved in fleshy albumen. Calyx usually persistent. Stamens mostly equal, inserted on the corolla. Style and stigma single. Placentæ in the axis, often projecting far into the cells. (Foliage rank-scented, and with the fruits mostly narcotic, often very poisonous, while some are edible.)—A large family in the tropics, but very few indigenous in our district.

* Corolla wheel-shaped, 5-parted or 5-lobed; the lobes valvate and their margins usually turned inward in the bud. Anthers connivent. Fruit a berry.

1. **Solanum.** Anthers opening by pores or chinks at the tip.

* * Corolla various, not wheel-shaped, nor valvate in the bud. Anthers separate.

† Fruit a berry, enclosed in the bladdery-inflated calyx. Corolla widely expanding.

2. **Physalis.** Calyx 5-cleft. Corolla 5-lobed or nearly entire. Berry juicy, 2-celled.

1. SOLANUM, Tourn. NIGHTSHADE.

Calyx and wheel-shaped corolla 5-parted or 5-cleft (rarely 4-10-parted), the latter plaited in the bud, and valvate or induplicate. Stamens exserted; filaments very short; anthers converging around the style, opening at the tip by two pores or chinks. Berry usually 2-celled.—Herbs, or shrubs in warm climates, the larger leaves often accompanied by a smaller lateral (rameal) one; the peduncles also mostly lateral and extra-axillary.—A vast genus, chiefly in warmer regions, including the POTATO (*S. TUBEROSUM*) and the EGG-PLANT (*S. MELONGENA*); while the TOMATO (*LYCOPERSICUM ESCULENTUM*) is closely related. (Name of unknown derivation.)

* Not prickly; anthers blunt; flowers and globose naked berries small.

† Perennial, climbing or twining.

1. **S. dulcamara, L.** BITTERSWEET. More or less pubescent; leaves ovate-heart-shaped, the upper halberd-shaped, or with two ear-like lobes or leaflets at base; flowers (purple or blue) in small cymes; berries oval, red.—Moist banks and around dwellings. June–September. (Nat. from Eu.)

2. **S. nigrum, L.** COMMON NIGHTSHADE. Low, much branched and often spreading, nearly glabrous, rough on the angles; leaves ovate, wavy-toothed; flowers white, in small umbel-like lateral clusters, drooping; calyx spreading; filaments hairy; berries globu-

lar, black.—Shaded grounds and fields; common, appearing as if introduced, but a cosmopolite. July–Sept.

2. *PHYSALIS*, L. GROUND CHERRY.

Calyx 5-cleft, reticulated and enlarging after flowering, at length much inflated and enclosing the 2-celled globular (edible) berry. Corolla between wheel-shaped and funnel-form, the very short tube marked with 5 concave spots at the base; the plaited border somewhat 5-lobed or barely 5–10-toothed. Stamens 5, erect; anthers separate, opening lengthwise.—Herbs (in this country), with the leaves often unequally in pairs, and the 1-flowered nodding peduncles extra-axillary; flowering through the summer. (Name *φυσάλις*, a bladder, from the inflated calyx.)

* *Corolla large, white or tinged with blue, without dark centre, with almost entire border; pubescence simple.*

1. *P. grandiflora*, Hook. Clammy-pubescent, erect; leaves lance-ovate, pointed, entire or nearly so; corolla 1–2' wide when expanded, and with a woolly ring in the throat; fruiting calyx globular, apparently nearly filled by the berry.—Q. to Sask.

* * *Corolla lurid greenish-white or yellow, mostly with dark centre, 3–10" broad.*

† *Strong-scented, villous or pubescent with viscid or glandular simple hairs; fruiting calyx ovate-pyramidal, carinately 5-angled, closed, loosely enveloping the green or yellow berry; leaves ovate or cordate.*

2. *P. Virginiana*, Mill. Perennial, diffusely much branched and widely spreading, or at first erect; leaves sometimes oblong, repand or obtusely toothed, rarely entire; corolla 9–12" broad, 5-angled or 5–10-toothed; anthers yellow. (*P. viscosa*, Gray, Man., not L.)—Light or sandy soils, Ont. and Minn.

ORDER 50. SCROPHULARIACEÆ (FIGWORT FAMILY).

Chiefly herbs (rarely trees), with didynamous stamens (or perfect stamens often only 2, rarely 5) inserted on the tube of the 2-lipped or more or less irregular corolla, the lobes of which are imbricated in the bud; fruit a 2-celled and usually many-seeded capsule, with the placenta in the axis; seeds anatropous, or amphitropous, with a

small embryo in copious albumen.—Style single; stigma entire or 2-lobed. Leaves and inflorescence various; but the flowers not terminal in any genuine representatives of the order.—A large order of bitterish plants, some of them narcotic-poisonous.

1. **ANTIRRHINIDÆ.** Upper lip or lobes of the corolla covering the lower in the bud (with occasional exceptions in *Mimulus*, etc.) Capsule usually septicidal.

Tribe I. VERBASCEÆ. Corolla rotate. Flowers racemose. Leaves alternate.

1. *Verbascum*. Stamens 5, all with anthers, and 3 or all with bearded filaments.

Tribe II. ANTIRRHINÆ. Corolla tubular, with a spur or sac at the base below, the throat usually with a palate. Capsule opening by chinks or holes. Flowers in simple racemes or axillary. Lower leaves usually opposite or whorled. Stamens 4.

2. *Linaria*. Corolla spurred at base; the palate seldom closing the throat.

Tribe III. CHELONEÆ. Corolla tubular, or 2-lipped, not spurred nor saccate below. Capsule 2-4-valved. Leaves opposite. Inflorescence usually compound, of small axillary spiked or racemed or umbel-like clusters or cymes, or when reduced to a single flower the peduncle mostly 2-bracteate. Stamens 4, and usually a rudiment of the fifth.

3. *Scrophularia*. Corolla inflated, globular or oblong, with four erect lobes and one spreading one. Rudiment of the sterile stamen a scale on the upper lip.

4. *Chelone*. Corolla tubular inflated above. Sterile stamen shorter than the others. Anthers very woolly. Seeds winged.

Tribe IV. GRATIOLEÆ. Corolla tubular, not saccate nor spurred. Capsule 2-valved. Flowers solitary in the axils of bracts or leaves; peduncles naked. Leaves all or the lower ones opposite. No trace of a fifth stamen.

* Stamens 4, all anther-bearing and similar.

5. *Mimulus*. Calyx prismatic, 5-angled, 5-toothed. Corolla elongated.

- II. **RHINANTHIDÆ.** Under lip or the lateral lobes of the corolla covering the upper in the bud. Capsule commonly loculicidal.

Tribe V. DIGITALEÆ. Corolla wheel-shaped, salver-shaped, or bell-shaped. Stamens 2 or 4, not approaching in pairs nor strongly didynamous; anthers 2-celled.

6. *Veronica*. Calyx 4- (rarely 3-5) parted. Corolla wheel-shaped or salver-shaped, almost regular. Stamens 2. Leaves chiefly opposite or whorled. Flowers racemed.

Tribe VI. GERARDIÆ. Corolla with a spreading and slightly unequal 5-lobed limb. Stamens 4, approximate in pairs. Leaves opposite, or the uppermost alternate.

* Corolla bell-shaped to funnel-form; anthers 2-celled.

7. *Gerardia*. Stamens strongly unequal, included.

Tribe VII. EUPHRASIEÆ. Corolla tubular, obviously 2-lipped; the upper lip narrow, erect or arched, enclosing the 4 usually strongly didynamous stamens.

* Anther-cells equal. Capsule many-several-seeded.

8. *Pedicularia*. Calyx not inflated. Capsule ovate or sword-shaped; seeds wingless.

** Anther-cells equal. Capsule 1-4-seeded.

9. *Melampyrum*. Calyx 4-cleft. Ovary 2-celled, 4-ovuled. Capsule flat, oblique.

1. VERBASCUM, L. MULLEIN.

Calyx 5-parted. Corolla 5-lobed, open or concave, wheel-shaped; the lobes broad and rounded, a little unequal. Stamens 5; all the filaments, or the 3 upper, woolly. Style flattened at the apex. Capsule globular, many-seeded.—Tall and usually woolly biennial herbs, with alternate leaves, those of the stem sessile or decurrent. Flowers in large terminal spikes or racemes, ephemeral; in summer. (The ancient Latin name, altered from *Barbascum*.)

1. *V. Thapsus*, L. COMMON MULLEIN. *Densely woolly throughout; stem tall and stout, simple, winged by the decurrent bases of the oblong acute leaves; flowers (yellow, very rarely white) in a prolonged and very dense cylindrical spike; lower stamens usually beardless.*—Fields, a common weed. (Nat. from Eu.)

2. *V. Blattaria*, L. MOTH M. *Green and smoothish, slender; lower leaves petioled, oblong, doubly serrate, sometimes lyre-shaped, the upper partly clasping; raceme loose; filaments all bearded with violet wool.*—Roadsides, Ont. Corolla either yellow, or white with a tinge of purple. (Nat. from Eu.)

2. LINARIA, Tourn. TOAD-FLAX.

Calyx 5-parted. Corolla personate, with the prominent palate often nearly closing the throat, spurred at base on the lower side. Stamens 4. Capsule thin, opening below the summit by one or two pores or chinks. Seeds many.—Herbs, with at least all the upper leaves alternate (in ours); fl. in summer. (Name from *Linum*, the Flax, which the leaves of some species resemble.)

* *Slender glabrous annual or biennial; leaves linear, entire and alternate (or smaller, oblong, and opposite on procumbent shoots); small blue flowers in a naked terminal raceme.*

1. *L. Canadensis*, Dumont. Flowering stems nearly simple (6-30' high); leaves flat (1-2" wide); pedicels erect, not longer than the filiform curved spur of the corolla.—Sandy soil, common.

** *Perennial, erect (1-3° high), glabrous, with narrow entire and alternate pale leaves, and yellow flowers in a terminal raceme.*

2. **L. vulgaris**, Mill. RAMSTED. BUTTER AND EGGS. Leaves linear or nearly so, extremely numerous; raceme dense; corolla 1' long or more, including the slender subulate spur; seeds winged.—Fields and roadsides, N.S. to Ont. (Nat. from Eu.)

3. SCROPHULARIA, Tourn. FIGWORT.

Calyx deeply 5-cleft. Corolla with a somewhat globular tube; the 4 upper lobes of the short border erect (the two upper longer), the lower spreading. Stamens 4, declined, with the anther-cells transverse and confluent into one; the fifth stamen a scale-like rudiment at the summit of the tube of the corolla. Capsule many-seeded.—Rank herbs, with mostly opposite leaves, and small greenish-purple or lurid flowers in loose cymes, forming a terminal narrow panicle. (So called because a reputed remedy for *scrofula*.)

1. **S. nodosa**, L., var. **Marilandica**, Gray. Smooth perennial (3-5° high); stem 4-sided; leaves ovate, oblong, or the upper lanceolate, acuminate, cut-serrate, rounded or rarely heart-shaped at base.—Damp grounds, Q. and Ont. (Eu., Asia, the type.)

4. CHELONE, Tourn. TURTLE-HEAD. SNAKE-HEAD.

Calyx of 5 distinct imbricated sepals. Corolla inflated-tubular, with the mouth a little open; upper lip broad and arched, keeled in the middle, notched at the apex; the lower woolly-bearded in the throat, 3-lobed at the apex, the middle lobe smallest. Stamens 4, with woolly filaments and very woolly heart-shaped anthers, and a fifth sterile filament smaller than the others. Seeds many, wing-margined.—Smooth perennials, with upright branching stems, opposite serrate leaves, and large white or purple flowers, which are nearly sessile in spikes or clusters, and closely imbricated with round-ovate concave bracts and bractlets. (Name from *χελωνη*, a tortoise, the corolla resembling in shape the head of a reptile.)

1. **C. glabra**, L. A foot or two (or even 6-7°) high; leaves narrowly to rather broadly lanceolate (4-5' long, 4-12" wide), gradually acuminate, serrate with sharp appressed teeth, narrowed at base usually into a very short petiole; bracts not ciliate; corolla white, or barely tinged with rose.—Wet places, Newf. westward.

5. **MIMULUS**, L. MONKEY-FLOWER.

Calyx prismatic, 5-angled, 5-toothed, the upper tooth largest. Corolla tubular; upper lip erect or reflexed-spreading, 2-lobed; the lower spreading, 3-lobed. Stamens 4. Stigma 2-lobed, the lobes ovate. Seeds numerous.—Herbs, with opposite leaves, and mostly handsome flowers on solitary axillary and bractless peduncles. (Diminutive of *mimus*, a buffoon, from the grinning corolla.)

* *Erect from a perennial root, glabrous; leaves feather-reined; corolla violet-purple.*

1. **M. ringens**, L. Stem square (1-2° high); leaves oblong or lanceolate, pointed, clasping by a heart-shaped base, serrate; peduncles longer than the flower; calyx-teeth taper-pointed, nearly equal; corolla personate.—Wet places, C.B. to Sask; common. July-Sept.—Flower 1-1½' long, rarely white.

6. **VERONICA**, L. SPEEDWELL.

Calyx 4- (rarely 3-5) parted. Corolla wheel-shaped or salver-shaped, the border 4 parted (rarely 5-parted); the lateral lobes or the lower ones commonly narrower than the others. Stamens 2, one each side of the upper lobe of the corolla; exserted; anther-cells confluent at the apex. Style entire; stigma single. Capsule flattened, obtuse or notched at the apex, 2-celled, few-many-seeded.—Chiefly herbs; leaves mostly opposite or whorled; flowers blue, flesh-color, or white. (Derivation doubtful; perhaps the flower of *St. Veronica*.)

§ 1. **LEPTANDRA**. *Tall perennials, with mostly whorled leaves; racemes terminal, dense, spiked; bracts very small; tube of the corolla longer than its limb and much longer than the calyx; both sometimes 5-cleft.*

1. **V. Virginica**, L. CULVER'S-ROOT. CULVER'S PHYSIC. Smooth or rather downy; stem simple, straight (2-6° high); leaves whorled in fours to sevens, short-petioled, lanceolate, pointed, finely serrate; spikes paniced; corolla small, nearly white; stamens much exserted; capsule oblong-ovate, not notched, opening by 4 teeth at the apex, many seeded.—Common; July, Aug.

§ 2. **VERONICA** proper. *Corolla wheel-shaped; capsule more or less notched, strongly flattened except in n. 2 and 3; low herbs.*

* *Perennials, stoloniferous or rooting at base, with opposite usually serrate leaves; racemes axillary, mostly opposite; corolla pale blue.*

† *Capsule turgid, orbicular, many-seeded.*

2. **V. Anagallis**, L. **WATER SPEEDWELL**. Smooth, creeping and rooting at base, then erect; leaves sessile, most of them clasping by a heart-shaped base, ovate-lanceolate, acute, serrate or entire (2-3' long); pedicels spreading; corolla pale blue with purple stripes; capsule slightly notched.—Brooks and ditches, N. S. west to the Rocky Mts. June-Aug. (Eu., Asia.)

3. **V. Americana**, Schweinitz. **AMERICAN BROOKLINE**. Smooth, decumbent at base, then erect (8-15' high); leaves mostly petioled, ovate or oblong, serrate, thickish, truncate or slightly heart-shaped at base; the slender pedicels spreading.—Brooks and ditches, common. June-Aug.

†† *Capsule strongly flattened, several-seeded.*

4. **V. scutellata**, L. **MARSH SPEEDWELL**. Smooth, slender and weak (6-12' high); leaves sessile, linear, acute, remotely denticulate; racemes several, very slender and zigzag; flowers few and scattered, on elongated spreading or reflexed pedicels; capsule very flat, much broader than long, notched at both ends or didymous.—Bogs, common. June-Aug. (Eu., Asia.)

5. **V. officinalis**, L. **COMMON SPEEDWELL**. Pubescent; stem prostrate, rooting at base; leaves short-petioled, obovate-elliptical or wedge-oblong, obtuse, serrate; racemes densely many-flowered; pedicels shorter than the calyx; capsule obovate-triangular, broadly notched.—Dry hills and open woods, N. S. to Ont. July. (Eu., Asia.)

** *Leaves opposite; flowers in a terminal raceme; the lower bracts leaf-like; capsules flat, several-seeded. Perennials (mostly turning blackish in drying.)*

6. **V. serpyllifolia**, L. **THYME-LEAVED SPEEDWELL**. Much branched at the creeping base, nearly smooth; branches ascending and simple (2-4' high); leaves ovate or oblong, obscurely crenate, the lowest petioled and rounded, the upper passing into lanceolate

bracts; *raceme loose*; corolla whitish, or pale blue, with deeper stripes; capsule rounded, broader than long, obtusely notched.—Roadsides and fields, common; introduced and indigenous. May–July. (Eu., Asia.)

7. GERARDIA, L.

Calyx bell-shaped, 5-toothed or 5-cleft. Corolla campanulate-funnel-form, or somewhat tubular, swelling above, with 5 more or less unequal spreading lobes, the 2 upper usually rather smaller and more united. Stamens 4, strongly didynamous, included, hairy; anthers approaching by pairs, 2-celled, the cells parallel, often pointed at base. Style elongated, mostly enlarged and flattened at the apex. Capsule globular or ovate, pointed, many-seeded.—Erect branching herbs (more or less root-parasitic); stem-leaves opposite, or the upper alternate, the uppermost reduced to bracts and subtending 1-flowered peduncles, which often form a raceme or spike. Flowers showy, purple or yellow; in late summer and autumn. (Dedicated to the celebrated herbalist, *John Gerarde*.)

§ 1. GERARDIA proper. *Corolla purple or rose-color (rarely white); calyx-teeth short; anthers alike, nearly pointless, pubescent; cauline leaves linear or narrower, entire.*

* *Annuals; herbage blackish in drying (except n. 9).*

† *Pedicels little if at all longer than the calyx and capsule.*

1. *G. purpurea*, L. PURPLE GERARDIA. Stem (1–2° high) with long and rigid widely spreading branches; *leaves linear, acute, rough-margined*; flowers large (1' long), bright purple, often downy; *pedicels shorter than the calyx, mainly opposite; calyx-teeth sharp-pointed*, from very short to about half as long as the tube.—Low grounds, mainly near the coast and in the region of the Great Lakes. Very variable.

†† *Pedicels usually exceeding the corolla; woolly anthers cuspidate at base.*

2. *G. tenuifolia*, Vahl. SLENDER G. *Leaves narrowly linear, acute*, the floral ones mostly like the others; *calyx-teeth very short, acute; capsule globular, not exceeding the calyx; corolla about ½' long*.—Low or dry ground, common.

8. PEDICULARIS, Tourn. LOUSEWORT.

Calyx various. Corolla strongly 2-lipped ; the upper lip arched, flattened, often beaked at the apex ; the lower erect at base, 2-crested above, 3-lobed ; lobes commonly spreading, the lateral ones rounded and larger. Stamens 4, under the upper lip ; anthers transverse ; the cells equal, pointless. Capsule ovate or lanceolate, mostly oblique, several-seeded.—Perennial herbs, with chiefly pinnatifid leaves, the floral bract-like, and rather large flowers in a spike. (Name from *pediculus*, a louse ; of no obvious application.)

1. **P. Canadensis, L. COMMON LOUSEWORT. WOOD BETONY.** Hairy ; stems simple, clustered (6–12' high) ; leaves scattered, the lowest pinnately parted, the others half-pinnatifid ; spike short and dense ; calyx split in front, otherwise almost entire, oblique ; upper lip of the (dull greenish-yellow and purplish) corolla hooded, incurved, 2-toothed under the apex ; capsule flat, somewhat sword-shaped.—Copses and banks, common. May–July.

9. MELAMPYRUM, Tourn. COW-WHEAT.

Calyx bell-shaped, 4-cleft ; the taper lobes sharp-pointed. Tube of corolla cylindrical, enlarging above ; upper lip arched, compressed, straight in front ; the lower erect-spreading, biconvex, 3-lobed at the apex. Stamens 4, under the upper lip ; anthers approximate, oblong, nearly vertical, hairy ; the equal cells minutely pointed at base. Ovary with 2 cules in each cell. Capsule flattened, oblique, 1–4-seeded.—Erect branching annuals, with opposite leaves, the lower entire, the upper mostly toothed at base. Flowers solitary in the upper axils. (Name from μέλας, black, and πρύς, wheat ; from the color of the seeds of some species as they appear mixed with grain.)

1. **M. Americanum, Michx.** Leaves lanceolate, short-petioled, the floral ones like the lower, or truncate at base and beset with a few bristly teeth ; calyx-teeth linear-awl-shaped, not half the length of the slender tube of the pale greenish-yellow corolla (5" long).—Open woods ; common, from N.S. westward. June–Sept.

ORDER 51. OROBANCHACEÆ (BROOM-RAPE FAMILY).

Herbs destitute of green foliage (root-parasites), monopetalous, didynamous, the ovary one-celled with 2 or 4 parietal placenta ; pod

very many-seeded ; seeds minute, with albumen and a very minute embryo.—Calyx persistent, 4-5-toothed or parted. Corolla tubular, more or less 2-lipped, ringent, persistent and withering ; upper lip entire or 2-lobed, the lower 3-lobed. Stamens 4, didynamous, inserted on the tube of the corolla ; anthers 2-celled, persistent. Ovary free, ovoid, pointed with a long style ; stigma large. Capsule 1-celled, 2-valved ; each valve bearing on its face one placenta or a pair. Seeds very numerous, minute. Low, thick or fleshy herbs, bearing scales in place of leaves, lurid yellowish or brownish throughout. Flowers solitary or spiked.

* Flowers of two sorts, scattered along slender paniced branches.

1. **Epiphegus.** Upper flowers sterile, with a tubular corolla ; the lower fertile, with the corolla minute and not expanding. Bracts inconspicuous.

* * Flowers all alike and perfect ; stems mostly simple.

2. **Aphyllon.** Flowers pedicellate, sometimes subsessile and thyrsoid apicate. Calyx regularly 5-cleft. Corolla somewhat 2-lipped. Stamens included.

1. EPIPHEGUS, Nutt. BEECH-DROPS. CANCER-ROOT.

Flowers racemose or spiked, scattered on the branches ; the upper sterile, with a long tubular corolla and long filaments and style ; the lower fertile, with a very short corolla which seldom opens, but is forced off from the base by the growth of the pod ; stamens and style very short. Calyx 5-toothed. Stigma capitate, a little 2-lobed. Capsule 2-valved at the apex, with 2 approximate placentæ on each valve.—Herbs slender, purplish or yellowish-brown, much branched, with small scattered scales, 6-12' high. (Name from *ἐπί*, upon, and *φηγός*, the Beech, because it grows on the roots of that tree.)

1. **E. Virginiana**, Bart. Corolla of the upper (sterile) flowers whitish and purple, 6-8" long, curved, 4-toothed.—Common under Beech-trees, parasitic on their roots ; N.S. to Ont. Aug.—Oct.

2. APHYLLON, Mitchell. NAKED BROOM-RAPE.

Flowers perfect, pedicellate, sometimes subsessile and thyrsoid-apicate. Calyx 5-cleft, regular. Corolla somewhat 2-lipped ; the upper lip more or less spreading and 2-lobed, the lower spreading, 3-lobed. Stamens included. Stigma broadly 2-lipped or crateriform. Capsule with 4 placentæ, equidistant or contiguous in pairs. Plants brownish or whitish. Flowers (purplish or yellowish) and

naked scapes minutely glandular-pubescent. (Name from a privative and φύλλον, foliage, alluding to the naked stalks.)

* *Flowers solitary on long naked scapes or peduncles, without bractlets; corolla with a long curved tube and spreading 5-lobed limb.*

1. **A. uniflorum**, Gray. ONE-FLOWERED CANCER-ROOT. *Stem subterranean or nearly so, very short, scaly, often branched, each branch sending up 1-3 slender one-flowered scapes (3-5' high); divisions of the calyx lance-awl-shaped, half the length of the corolla, which is 1' long, with two yellow bearded folds in the throat, and obovate lobes.*—Damp woodlands, Newf., west to the Pacific.—April–July.

ORDER 52. VERBENACEÆ (VERVAIN FAMILY).

Herbs or shrubs, with opposite leaves, more or less 2-lipped or irregular corolla, and didynamous stamens, the 2-4-celled (in Phryma 1-celled) fruit dry or drupaceous, usually splitting when ripe into as many 1-seeded indehiscent nutlets; differing from the following order in the ovary not being 4-lobed, the style therefore terminal, and the plants seldom aromatic or furnishing a volatile oil.—Seeds with a straight embryo and little or no albumen.

Tribe I. VERBENÆ. Ovary 2-4-celled, with an erect anatropous ovule in each cell.

1. **Verbena.** Flowers in spikes or heads. Calyx tubular. Fruit splitting into 4 nutlets.

Tribe II. PHRYMÆ. Ovary 1-celled; ovule erect, orthotropous.

2. **Phryma.** Flowers in slender spikes. Calyx cylindrical, 2-lipped. Fruit an achene.

1. VERBENA, Tourn. Vervain.

Calyx tubular, 5-toothed, one of the teeth often shorter than the others. Corolla tubular, often curved, salver-form; the border somewhat unequally 5-cleft. Stamens included; the upper pair occasionally without anthers. Style slender; stigma mostly 2-lobed. Fruit splitting into 4 seed-like nutlets.—Flowers sessile, in single or often paniced spikes, bracted; produced all summer. (The Latin name for any sacred herb; derivation obscure.)

§ 1. *Anthers not appendaged; flowers small, in narrow spikes.*

* *Spikes filiform, with flowers or at least fruits scattered, naked, the inconspicuous bracts shorter than the calyx.*

1. **V. urticæfolia**, L. WHITE V. Perennial, from minutely pubescent to almost glabrous, rather tall (3-5° high); *leaves oval or oblong-ovate, acute, coarsely serrate, petioled*; spikes at length much elongated, loosely paniced; flowers very small, white.—Waste or open grounds. (Trop. Am.)

** *Spikes thicker or densely flowered; the fruits crowded, mostly overlapping each other; bracts inconspicuous, not exceeding the flowers; perennial.*

2. **V. angustifolia**, Michx. Low (6-18' high), often simple; *leaves narrowly lanceolate, tapering to the base, sessile, roughish, slightly toothed*; spikes few or single; the purple flowers crowded, larger than in the next.—Dry or sandy ground, Q. and Ont.

3. **V. hastata**, L. BLUE VERVAIN. Tall (4-6° high); *leaves lanceolate or oblong-lanceolate, taper-pointed, cut-serrate, petioled, the lower often lobed and sometimes halberd-shaped at base*; spikes linear, erect, corymbed or paniced; flowers blue.—Waste grounds and roadsides; common.

2. PHRYMA, L. LOPSEED.

Calyx cylindrical, 2-lipped; the upper lip of 3 bristle-awl-shaped teeth; the lower shorter, 2-toothed. Corolla 2-lipped; upper lip notched; the lower much larger, 3-lobed. Stamens, included. Style slender; stigma 2-lobed. Fruit dry, in the bottom of the calyx, oblong, 1-celled and 1-seeded. Seed orthotropous. Cotyledons convolute round their axis.—A perennial herb, with slender branching stems, and coarsely toothed ovate leaves, the lower long-petioled; the small opposite flowers in elongated and slender terminal spikes, strictly reflexed in fruit. Corolla purplish or rose-color. (Derivation of the name unknown.)

1. **P. Leptostachya**, L. Plant 2-3° high; leaves 3-5' long, thin; calyx strongly ribbed and closed in fruit, the long slender teeth hooked at the tip.—Moist and open woods, common. (E. Asia.)

ORDER 53. LABIATÆ (MINT FAMILY).

Chiefly herbs, with square stems, opposite aromatic leaves, more or less 2-lipped corolla, didynamous or diandrous stamens, and a deeply 4-lobed ovary, which forms in fruit 4 little seed-like nutlets or achenes,

surrounding the base of the single style in the bottom of the persistent calyx, each filled with a single erect seed.—Nutlets smooth or barely roughish and fixed by their base, except in the first tribe. Albumen mostly none. Embryo straight (except in *Scutellaria*); radicle at the base of the fruit. Upper lip of the corolla 2-lobed or sometimes entire; the lower 3-lobed. Stamens inserted on the tube of the corolla. Style 2-lobed at the apex. Flowers axillary, chiefly in cymose clusters, these often aggregated in terminal spikes or racemes. Foliage mostly dotted with small glands containing a volatile oil, upon which depends the warmth and aroma of the plants of this large and well-known family.

I. Nutlets rugose-reticulated, attached obliquely or ventrally; ovary merely 4-lobed.

Tribe I. AJUGOIDEÆ. Stamens 4, ascending and parallel, mostly exserted from the upper side of the corolla. Calyx 5–10-nerved.

* Limb of corolla irregular, seemingly unilabiate, the upper lip being either split down or very short; stamens exserted from the cleft.

1. *Teucrium*. Corolla deeply cleft between the 2 small lobes of the upper lip.

II. Nutlets smooth or granulate; scar basal, small; ovary deeply 4-parted.

Tribe II. SATUREINEÆ. Upper pair of stamens shorter or wanting; anthers 2-celled. Upper lip of corolla not galeate or concave.

* Flowers in more or less crowded clusters or whorls, axillary or spicate.

† Corolla not evidently 2-lipped, but almost equally 4-lobed, small. Stamens erect, distant.

2. *Mentha*. Fertile stamens 4, nearly equal.

3. *Lycopus*. Fertile stamens 2, and often 2 sterile filaments without anthers.

†† Corolla more or less 2-lipped.

‡ Stamens ascending or arcuate, often more or less converging.

4. *Hedeoma*. Calyx gibbous on the lower side, hairy in the throat. Flowers loose.

Tribe III. NEPETEÆ. Stamens 4, the upper (inner) pair longer than the lower, ascending or diverging. Corolla 2-lipped; the upper lip concave or arched, the lower spreading. Calyx mostly 15-nerved.

* Anthers more or less approximate in pairs; their cells divaricate or divergent; filaments ascending, not exserted.

5. *Nepeta*. Calyx more or less curved, equally 5-toothed.

Tribe IV. SCUTELLARINEÆ. Stamens 4, ascending and parallel. Calyx bilabiate, closed in fruit; the rounded lips entire. Corolla bilabiate, the upper lip arched.

6. *Scutellaria*. Calyx with a helmet-like projection on the upper side.

Tribe V. STACHYDEÆ. Stamens 4, parallel and ascending under the galeate or concave upper lip, the lower (outer) pair longer. Calyx 5-10-nerved, not 2-lipped (except in n. 7).

* Calyx reticulate-veiny, deeply bilabiate, closed in fruit.

7. Brunella. Calyx nerved and veiny; upper lip flat, 3-toothed, the lower 2-cleft.

** Calyx of firmer texture, distinctly 5-10-nerved or striate, 5-10-toothed.

† Stamens ascending under the galeate upper lip of the corolla.

‡ Stamens often deflexed or contorted after anthesis.

8. Stachys. Calyx tubular-bell-shaped, equally 5-toothed or the 2 upper teeth united into one. Nutlets rounded at top.

1. TEUCRIUM, L. GERMANDER.

Calyx 5-toothed. Corolla with the 4 upper lobes nearly equal, oblong, turned forward, so that there seems to be no upper lip; the lower lobe much larger. Stamens 4, exerted from the deep cleft between the 2 upper lobes of the corolla; anther-cells confluent. (Named for *Teucer*, king of Troy.)

1. T. Canadense, L. AMERICAN GERMANDER. WOOD SAGE. Perennial, *downy*, erect (1-3° high); leaves ovate-lanceolate, serrate, rounded at base, short-petioled, hoary underneath, the floral scarcely longer than the oblique unequally-toothed calyx; whorls about 6-flowered, crowded in a long and simple wand-like spike; *calyx canescent, the 3 upper lobes very obtuse* or the middle one acutish; corolla purple, rose, or sometimes cream-color (6" long).—Low grounds; N. B. to Ont. July-September.

2. MENTHA, Tourn. MINT.

Calyx bell-shaped or tubular, 5-toothed, equal or nearly so. Corolla with a short included tube; the bell-shaped border somewhat equally 4-cleft; the upper lobe broadest, entire or notched. Stamens 4, equal, erect, distant.—Odorous perennial herbs; the small flowers mostly in close clusters, forming axillary capitate whorls, sometimes approximated in interrupted spikes, produced in summer, of two sorts as to the fertility of the stamens in most species. Corolla pale purple or whitish. Species mostly adventive or naturalized from Europe, with many hybrids. (*Mint* of Theophrastus, from a Nymph of that name, fabled to have been changed into Mint by Proserpine.)

* *Flowers pedicellate, less crowded, in interrupted leafless spikes, or some in the upper axils; leaves petioled.*

1. *M. piperita*, L. PEPPERMINT. *Glabrous* (somewhat hairy in var. *SUBHIRSUTA*), very pungent-tasted; leaves ovate-oblong to oblong lanceolate, acute, sharply serrate; spikes narrow, loose.—Along brooks, escaped everywhere.

** *Flowers in globular whorls or clusters, all in the axils of the leaves, the uppermost axils not flower-bearing; leaves more or less petioled; toothed.*

2. *M. Canadensis*, L. WILD MINT. *Leaves varying from ovate-oblong to lanceolate, tapering to both ends; calyx oblong-bell-shaped, the teeth rather short; hairs on the stem not conspicuously reflexed. The commoner form is more or less hairy, and has nearly the odor of Pennyroyal.—Wet places, across the continent, and northward.*

Var. *glabrata*, Benth. *Leaves and stems almost glabrous, the former sometimes very short petioled; scent sweeter, as of Monarda.—Similar range.*

3. LYCOPUS, Tourn. WATER HOREHOUND.

Calyx bell-shaped, 4-5-toothed, naked in the throat. Corolla bell-shaped, scarcely longer than the calyx, nearly equally 4-lobed. Stamens 2, distant; the upper pair either sterile rudiments or wanting. Nutlets with thickened margins.—Perennial low herbs, glabrous or puberulent, resembling Mints, with sharply toothed or pinnatifid leaves, the floral ones similar and much longer than the dense axillary whorls of small mostly white flowers; in summer. (Name compounded of λύκος, a wolf, and πούς, foot, from some fancied likeness in the leaves.)

* *Stoloniferous, the long filiform runners often tuberiferous; leaves only serrate.*

† *Calyx-teeth usually 4, barely acutish, shorter than the mature nutlets.*

1. *L. Virginicus*, L. BUGLE-WEED. *Stem obtusely 4-angled (6'-2° high); leaves oblong or ovate-lanceolate, toothed, entire toward the base, acuminate at both ends, short-petioled; calyx-teeth ovate.—Shady moist places. Lab., across the continent.*

** *Not stoloniferous; leaves incised or pinnatifid.*

2. *L. sinuatus*, Ell. *Stem erect, 1-3° high, acutely 4-angled; leaves oblong or lanceolate (1½-2' long), acuminate, irregularly*

incised or laciniate-pinnatifid, or some of the upper merely sinuate, tapering to a slender petiole; calyx-teeth short-cuspidate; sterile filaments slender, conspicuous, with globular or spatulate tips. (L. *Europæus*, var. *sinuatus*, Gray.)—Common.

4. HEDEOMA, Pers. MOCK PENNYROYAL.

Calyx ovoid or tubular, gibbous on the lower side near the base, 13-nerved, bearded in the throat, 2-lipped; upper lip 3-toothed, the lower 2-cleft. Corolla 2-lipped; upper lip erect, flat, notched at the apex, the lower spreading, 3-cleft. Fertile stamens 2; the upper pair reduced to sterile filaments or wanting.—Low, odorous annuals, with small leaves, and loose axillary clusters of flowers (in summer), often forming terminal leafy racemes. (Altered from *ῥόδισμον*, an ancient name of Mint, from its sweet scent.)

* *Sterile filaments manifest; leaves oblong-ovate, petioled, somewhat serrate.*

1. *H. pulegioides*, Pers. AMERICAN PENNYROYAL. Erect, branching, hairy; whorls few-flowered; upper calyx-teeth triangular, the lower setaceous-subulate; corolla (bluish, pubescent) scarcely exerted (2–3" long); taste and odor nearly of the true *Pennyroyal* (*Mentha Pulegium*) of Europe.—Common from C. B. to Ont.

5. NEPETA, L. CAT-MINT.

Calyx tubular, often incurved, obliquely 5-toothed. Corolla dilated in the throat, 2-lipped; the upper lip erect, rather concave, notched or 2-cleft; the lower spreading, 3-cleft, the middle lobe largest, either 2-lobed or entire. Stamens 4, ascending under the upper lip, the lower pair shorter; anthers approximate in pairs, the cells divergent.—Perennial herbs. (The Latin name, thought to be derived from *Nepete*, an Etrurian city.)

§ 1. *Cymose clusters rather dense and many-flowered, forming interrupted spikes or racemes; upper floral leaves small and bract-like.*

1. *N. Cataria*, L. CATNIP. Downy, erect, branched; leaves heart-shaped, oblong, deeply crenate, whitish-downy underneath; corolla whitish, dotted with purple.—Near dwellings; a very common weed. July–Sept. (Nat. from Eu.)

§ 2. **GLECHOMA.** *Leaves all alike; the axillary clusters loosely few-flowered.*

2. **N. Glechoma**, Benth. **GROUND IVY. GILL-OVER-THE-GROUND.** Creeping and trailing; leaves petioled, round kidney-shaped, crenate, green both sides; corolla thrice the length of the calyx, light blue.—Damp or shady places, common. (Nat. from Eu.)

6. **SCUTELLARIA**, L. **SKULLCAP.**

Calyx bell-shaped in flower, 2-lipped; the lips entire, closed in fruit, the upper with a helmet-like at length concave and enlarged appendage on the back (the upper sepal); calyx splitting to the base at maturity, the upper lip usually falling away. Corolla with an elongated curved ascending tube, dilated at the throat, 2-lipped; the upper lip arched, entire or barely notched, the lateral lobes mostly connected with the upper rather than the lower lip; the lower lobe or lip spreading and convex, notched at the apex. Stamens 4, ascending under the upper lip; anthers approximate in pairs, ciliate or bearded, those of the lower stamens 1-celled (halved), of the upper 2-celled and heart-shaped.—Bitter perennial herbs, not aromatic, the short peduncles or pedicels chiefly opposite, 1-flowered, often 1-sided, axillary or spiked or racemed; in summer. (Name from *scutella*, a dish, in allusion to the appendage to the fruiting calyx.)

§ 1. *Nutlets wingless, mostly marginless, on a low gynobase.*

* *Flowers small (3" long), in axillary and sometimes terminal 1-sided racemes.*

1. **S. lateriflora**, L. **MAD-DOG SKULLCAP.** Smooth; stem upright, much branched (1-2' high); leaves lanceolate-ovate or ovate-oblong, pointed, coarsely serrate, rounded at base, petioled (2-3' long), the lower floral ones similar; flowers blue, rarely white.—Wet shaded places, common.

** *Flowers solitary in the axils of the upper mostly sessile leaves, which resemble the lower ones but are occasionally reduced.*

2. **S. parvula**, Michx. Herbaceous; subterranean stolons moniliform-tuberiferous; minutely downy, dwarf (3-6' high), branched and spreading; all but the lower leaves sessile and entire, the lowest round-ovate, the others ovate or lance-ovate, slightly heart-

shaped (6-8" long); corolla 2-4" long.—Sandy banks, N.S. to Sask.

3. ***B. galericulata*, L.** *Herbaceous; subterranean stolons not tuberiferous; smooth or a little downy, erect (1-2° high), simple; leaves ovate-lanceolate, acute, serrate, roundish and slightly heart-shaped at base (1-2' long); corolla violet-blue, 8-9" long, with slender tube, the large lower lip nearly erect.—Wet shady places; common especially northward. (Eu.)*

7. **BRUNELLA**, Tourn. SELF-HEAL.

Calyx tubular-bell-shaped, somewhat 10-nerved and reticulated-veiny, flattened on the upper side, naked in the throat, closed in fruit, 2-lipped; upper lip broad and flat, truncate, with 3 short teeth, the lower 2-cleft. Corolla ascending, slightly contracted at the throat and dilated at the lower side just beneath it, 2-lipped; upper lip erect, arched, entire; the lower reflexed-spreading, 3-cleft, its lateral lobes oblong, the middle one rounded, concave, denticulate. Stamens 4, ascending under the upper lip; filaments 2-toothed at the apex, the lower tooth bearing the anther; anthers approximate in pairs, their cells diverging.—Low perennials, with nearly simple stems, and 3-flowered clusters of flowers sessile in the axils of round and bract-like membranaceous floral leaves, imbricated in a close spike or head. (Name said to be from the German *braune*, a disease of the throat, for which this plant was a reputed remedy.)

1. ***B. vulgaris*, L.** COMMON SELF-HEAL OR HEAL-ALL. Leaves ovate-oblong, entire or toothed, petioled, hairy or smoothish; corolla (violet or flesh-color, rarely white) not twice the length of the purplish calyx.—Woods and fields, Newf., westward across the continent. June-Sept. (Eu.)

8. **STACHYS**, Tourn. HEDGE-NETTLE.

Calyx tubular-bell-shaped, 5-10-nerved, equally 5-toothed, or the upper teeth united to form an upper lip. Corolla not dilated at the throat; upper lip erect or rather spreading, often arched, entire or nearly so; the lower usually longer and spreading, 3-lobed, with the middle lobe largest and nearly entire. Stamens 4, ascending under the upper lip (often reflexed on the throat after

flowering); anthers approximate in pairs. Nutlets obtuse, not truncate.—Whorls 2-many-flowered, approximate in a terminal raceme or spike (whence the name, from *σπάχνη*, a spike). Flowers purple or rose-red, in summer.

* Root perennial; stem erect.

† Leaves obscurely or not at all cordate, sessile or short-petioled.

1. *S. palustris*, L. Stem 4-angled (2-3° high), leafy, *hirsute with spreading or reflexed hairs*, especially on the angles; leaves sessile, or the lower short-petioled, *oblong- or ovate-lanceolate, crenately serrate*, rounded at base, *downy or hairy-pubescent*, obtusish (2-4' long), the upper floral ones shorter than the nearly sessile calyx; whorls 6-10-flowered, the upper crowded into an interrupted spike; calyx hispid; the lance-subulate teeth somewhat spiny, half the length of the corolla, diverging in fruit; *upper lip of corolla pubescent*.—Wet ground, Newf., westward across the continent.

ORDER 54. PLANTAGINACEÆ (PLANTAIN FAMILY).

Chiefly stemless herbs, with regular 4-merous spiked flowers, the stamens inserted on the tube of the dry and membranaceous veinless monopetalous corolla, alternate with its lobes;—chiefly represented by the two following genera.

1. PLANTAGO, Tourn. PLANTAIN. RIBWORT.

Calyx of 4 imbricated persistent sepals, mostly with dry membranaceous margins. Corolla salver-form or rotate, withering on the pod, the border 4-parted. Stamens 4, or rarely 2, in all or some flowers with long and weak exserted filaments, and fugacious 2-celled anthers. Ovary 2-celled, with 1-several ovules in each cell. Style and long hairy stigma single, filiform. Capsule 2-celled, 2-several-seeded, opening transversely, so that the top falls off like a lid and the loose partition (which bears the peltate seeds) falls away. Embryo straight, in fleshy albumen.—Leaves ribbed. Flowers whitish, small, in a bracted spike or head, raised on a naked scape. (The Latin name.)

§ 1. *Stamens 4; flowers all perfect; corolla not closed over the fruit.*

* *Flowers protogynous, the style first projecting from the unopened corolla, the anthers long-exserted after the corolla has opened; seeds not hollowed on the face (except in P. lanceolata).*

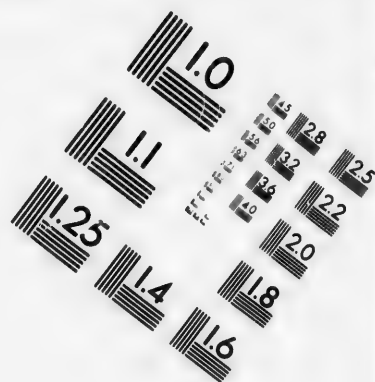
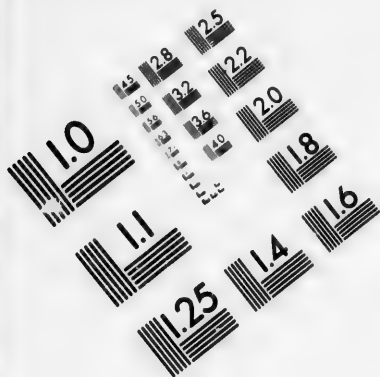
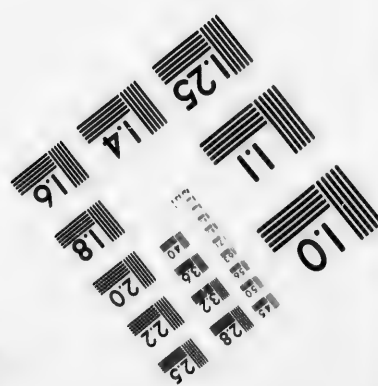
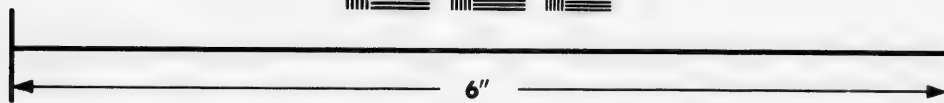
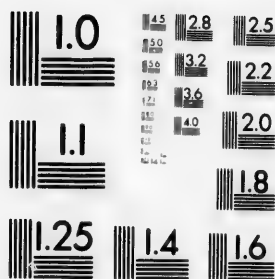


IMAGE EVALUATION TEST TARGET (MT-3)



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

1.5 2.8
2.5 3.2
3.6 4.0
4.5 5.0
5.5 6.0
6.5 7.0
7.5 8.0
8.5 9.0
9.5 10.0
10.5 11.0
11.5 12.0
12.5 13.0
13.5 14.0
14.5 15.0
15.5 16.0
16.5 17.0
17.5 18.0
18.5 19.0
19.5 20.0
20.5 21.0
21.5 22.0
22.5 23.0
23.5 24.0
24.5 25.0
25.5 26.0
26.5 27.0
27.5 28.0
28.5 29.0
29.5 30.0
30.5 31.0
31.5 32.0
32.5 33.0
33.5 34.0
34.5 35.0
35.5 36.0
36.5 37.0
37.5 38.0
38.5 39.0
39.5 40.0
40.5 41.0
41.5 42.0
42.5 43.0
43.5 44.0
44.5 45.0
45.5 46.0
46.5 47.0
47.5 48.0
48.5 49.0
49.5 50.0
50.5 51.0
51.5 52.0
52.5 53.0
53.5 54.0
54.5 55.0
55.5 56.0
56.5 57.0
57.5 58.0
58.5 59.0
59.5 60.0
60.5 61.0
61.5 62.0
62.5 63.0
63.5 64.0
64.5 65.0
65.5 66.0
66.5 67.0
67.5 68.0
68.5 69.0
69.5 70.0
70.5 71.0
71.5 72.0
72.5 73.0
73.5 74.0
74.5 75.0
75.5 76.0
76.5 77.0
77.5 78.0
78.5 79.0
79.5 80.0
80.5 81.0
81.5 82.0
82.5 83.0
83.5 84.0
84.5 85.0
85.5 86.0
86.5 87.0
87.5 88.0
88.5 89.0
89.5 90.0
90.5 91.0
91.5 92.0
92.5 93.0
93.5 94.0
94.5 95.0
95.5 96.0
96.5 97.0
97.5 98.0
98.5 99.0
99.5 100.0

10

† *Corolla glabrous ; leaves strongly ribbed ; perennial.*

‡ *Ribs of the leaf free to the contracted base.*

1. **P. major**, L. COMMON PLANTAIN. Smooth or rather hairy, rarely roughish; *leaves ovate, oblong, oval*, or slightly heart-shaped, often toothed, abruptly narrowed into a channelled petiole; *spike dense, obtuse*; *sepals round-ovate or obovate*; *capsule ovoid, circumscissile near the middle, 8-18-seeded*; *seeds angled, reticulated*.—Waysides and near dwellings everywhere. Doubtless introduced from Eu., but native from L. Superior and N. Minn., northward.

2. **P. lanceolata**, L. RIBGRASS. RIPLEGRASS. ENGLISH PLANTAIN. Mostly hairy; scape grooved-angled, at length much longer than the *lanceolate or lance-oblong leaves*, slender (9'-2° high); spike dense, at first capitate, in age cylindrical; bract and sepals scarious, brownish; *seeds 2, hollowed on the face*.—Very common. (Nat. from Eu.)

†† *Corolla-tube externally pubescent; leaves linear or filiform, fleshy, indistinctly ribbed; seeds 2-4; maritime, often woolly at base.*

3. **P. maritima**, L. Perennial; spikes dense.—Coast of Mass.; Gulf of St. Lawrence to Lab. and Greenland. (Eu.)

ORDER 55. PHYTOLACCACEÆ (POKEWEED FAMILY).

Plants with alternate entire leaves and perfect flowers, having the general characters of Chenopodiaceæ, but usually a several-celled ovary composed of as many carpels united in a ring, and forming a berry in fruit.

1. PHYTOLACCA, Tourn. POKEWEED.

Calyx of 5 rounded and petal-like sepals. Stamens 5-30. Ovary of 5-12 carpels, united in a ring, with as many short separate styles, in fruit forming a depressed-globose 5-12-celled berry, with a single vertical seed in each cell. Embryo curved in a ring around the albumen.—Tall and stout perennial herbs, with large petioled leaves, and terminal racemes which become lateral and opposite the leaves. (Name compounded of *φυτόν*, *plant*, and the French *lac*, lake, in allusion to the crimson coloring matter which the berries yield.)

1. **P. decandra**, L. COMMON POKE OR SCOKE. GARGET. PIGEON-BERRY. Stamens and styles 10.—Low grounds. July-

Sept.—A smooth plant, with a rather unpleasant odor, and a very large poisonous root, often 4-6' in diameter, sending up stout stalks at length 6-9° high; calyx white; ovary green, berries in long racemes, dark-purple and filled with crimson juice, ripe in autumn.

ORDER 56. **POLYGONACEÆ** (BUCKWHEAT FAMILY).

Herbs, with alternate entire leaves, and stipules in the form of sheaths (ocreae, these sometimes obsolete) *above the swollen joints of the stem; the flowers mostly perfect, with a more or less persistent calyx, a 1-celled ovary bearing 2 or 3 styles or stigmas, and a single erect orthotropous seed.* Fruit usually an achene, compressed or 3-4-angled or -winged. Embryo curved or straightish, on the outside of the albumen, or rarely in its centre. Stamens 4-12, inserted on the base of the 3-6-cleft calyx. (Juice often acrid, sometimes agreeably acid, as in Sorrel; the roots, as in Rhubarb, sometimes cathartic.)

* Flowers without involucre; stamens 4 to 8.

† Stipular sheaths manifest; ovule erect from the base of the cell.

‡ Sepals 4 or 6, the outer row reflexed, the inner erect and enlarging in fruit.

1. **Rumex**. Sepals 6. Stigmas 3. Achene 3-angled.

1. **RUMEX**, L. DOCK. SORREL.

Calyx of 6 sepals; the 3 outer herbaceous, sometimes united at base, spreading in fruit; the 3 inner larger, somewhat colored, enlarged after flowering (in fruit called *valves*) and convergent over the 3-angled achene, veiny, often bearing a grain-like tubercle on the back. Stamens 6. Styles 3; stigmas tufted. Embryo slightly curved, lying along one side of the albumen, slender.—Coarse herbs, with small and homely (mostly green) flowers, which are crowded and commonly whorled in paniced racemes; the petioles somewhat sheathing at base. (The ancient Latin name; of unknown etymology.)

§ 1. **LAPATHUM**. DOCK. *Flowers perfect or monœciously polygamous; herbage not sour or scarcely so; none of the leaves halberd-shaped. (Flowering through the summer.)*

* Perennials, 1-7° high, mostly with fusiform roots; valves not bearing bristles.

- † *Valves smaller, one or more of them conspicuously grain-bearing.*
 ‡ *Indigenous; leaves not wavy, none heart-shaped, except the lowest of n. 2.*

1. **R. salicifolius**, Weinmann. **WHITE DOCK.** Rather low (1-3° high); root white; leaves narrowly or linear-lanceolate, or the lowest oblong; whorls much crowded; pedicels much shorter than the fruiting calyx; valves deltoid-ovate, obtusish or acutish (about 1½" long), one, two or sometimes all with a conspicuous often very large grain; otherwise nearly as n. 3.—Salt marshes, from Newf., far westward.

2. **R. verticillatus**, L. **SWAMP DOCK.** Rather tall (3-5° high); leaves lanceolate or oblong-lanceolate, rather obtuse, thickish, pale-green, the lowest often heart-shaped at base; racemes nearly leafless, elongated, loose, the whorls crowded or the lower ones distant; fruit-bearing pedicels slender, club-shaped, abruptly reflexed, 3-4 times longer than the fruiting calyx; valves dilated-rhomboid, obtusely somewhat pointed, strongly rugose-reticulated, each bearing a very large grain.—Wet swamps, common.

- † ‡ *Naturalized European weeds; lower leaves mostly heart-shaped at base.*

3. **R. crispus**, L. **CURLED DOCK.** Smooth (3-4° high); leaves with strongly wavy-curved margins, lanceolate, acute, the lower truncate or scarcely heart-shaped at base; whorls crowded in prolonged wand-like racemes, leafless above; valves round-heart-shaped, obscurely denticulate or entire, mostly all grain-bearing.—In cultivated and waste ground, very common.

§ 2. **ACETOSA.** **SORREL.** Flowers diœcious, small, in a terminal naked panicle; herbage sour; some leaves halberd-shaped; smooth perennials, spreading by running rootstocks, flowering in spring.

4. **R. Acetosella**, L. **FIELD or SHEEP SORREL.** Low (6-12' high); leaves narrow-lanceolate or linear, halberd-form, at least those of the root, the narrow lobes entire; pedicels jointed with the flower; valves scarcely enlarging in fruit, ovate, naked.—Abundant everywhere. (Nat. from Eu.)

ORDER 57. **ARISTOLOCHIACEÆ** (BIRTHWORT FAMILY).

Twining shrubs, or low herbs, with perfect flowers, the conspicuous lurid calyx valvate in bud and coherent (at least at base) with the

6-celled ovary, which forms a many-seeded 6-celled capsule or berry in fruit. Stamens 6-12, more or less united with the style; anthers adnate, extrorse.—Leaves petioled, mostly heart-shaped and entire. Seeds anatropous, with a large fleshy rhaphe, and a minute embryo in fleshy albumen. A small family of bitter-tonic or stimulant, sometimes aromatic plants.

1. **Asarum**. Stemless herbs. Stamens 12, with more or less distinct filaments.

1. **ASARUM**, Tourn. ASARABACCA. WILD GINGER.

Calyx regular; the limb 3-cleft or parted. Stamens 12, with more or less distinct filaments, their tips usually continued beyond the anther into a point. Capsule rather fleshy, globular, bursting irregularly or loculicidal. Seeds large, thick.—Stemless perennial herbs, with aromatic-pungent creeping rootstocks bearing 2 or 3 scales, then 1 or 2 kidney-shaped or heart-shaped leaves on long petioles, and a short-peduncled flower close to the ground in the lower axil; in spring. (An ancient name, of obscure derivation.)

§ 1. *Calyx-tube wholly adnate to the ovary, the tips inflexed in bud; filaments slender, much longer than the short anthers; style barely 6-lobed at the summit, with 6 radiating thick stigmas; leaves a single pair, unspotted.*

1. **A. Canadense**, L. Soft-pubescent; leaves membranaceous, kidney-shaped, more or less pointed (4-5' wide when full grown); calyx bell-shaped, the upper part of the short-pointed lobes widely and abruptly spreading, brown-purple inside.—Hillsides in rich woods; common, especially northward.

ORDER 58. **SANTALACEÆ** (SANDALWOOD FAMILY).

Herbs, shrubs, or trees, with entire leaves; the 4-5-cleft calyx valvate in the bud, its tube coherent with the 1-celled ovary, which contains 2-4 ovules suspended from the apex of a stalk-like free central placenta which rises from the base of the cell, but the (indehiscent) fruit always 1-seeded.—Seed destitute of any proper seed-coat. Embryo small, at the apex of copious albumen; radicle directed upward; cotyledons cylindrical. Stamens equal in number to the lobes of the calyx, and inserted opposite them into the edge of the fleshy disk at their base. Style 1. A small order, the greater part belonging to warm regions.

1. **Comandra**. Flowers perfect, in umbel-like clusters. Low herbaceous perennials.

1. **COMANDRA**, Nutt. BASTARD TOAD-FLAX.

Flowers perfect. Calyx bell-shaped or soon urn-shaped, lined above the ovary with an adherent disk which has a 5-lobed free border. Stamens inserted on the edge of the disk between its lobes, opposite the lobes of the calyx, to the middle of which the anthers are connected by a tuft of thread-like hairs. Fruit drupe-like or nut-like, crowned by the persistent calyx-lobes, the cavity filled by the globular seed.—Low and smooth (sometimes parasitic) perennials, with herbaceous stems from a rather woody base or root, alternate and almost sessile leaves, and greenish-white flowers in terminal or axillary small umbel-like clusters. (Name from *κόμη*, *hair*, and *άνδρες*, for *stamens*, in allusion to the hairs on the calyx-lobes which are attached to the anthers.)

1. **C. umbellata**, Nutt. Stems 8–10' high, branched, very leafy; leaves oblong, pale (1' long); *peduncles* several and *corymbose clustered at the summit, several-flowered*; calyx-tube conspicuously continued as a neck to the dry *globular-urn-shaped fruit*; *the lobes oblong*; *style slender*.—Dry ground, common. May, June. Root forming parasitic attachments to the roots of trees.

2. **C. livida**, Richardson. *Peduncles* slender, *axillary, 3–5-flowered*, shorter than the oval leaves; calyx-tube not continued beyond the ovary, *the lobes ovate*; *style short*; fruit pulpy when ripe, red.—Newf., west and northward.

SUB-CLASS II. MONOCOTYLEDONS OR ENDOGENS.

Stems with no manifest distinction into bark, wood, and pith, but the woody fibre and vessels in bundles or threads which are irregularly imbedded in the cellular tissue; perennial trunks destitute of annual layers. Leaves mostly parallel-veined (nerved) and sheathing at the base, seldom separating by an articulation, almost always alternate or scattered and not toothed. Parts of the flower commonly in threes. Embryo with a single cotyledon, and the leaves of the plumule alternate.

ORDER 59. ORCHIDACEÆ (ORCHIS FAMILY).

Herbs, clearly distinguished by their perfect irregular flowers, with 6-merous perianth adnate to the 1-celled ovary, with innumerable ovules on 3 parietal placenta, and with either one or two gynandrous stamens, the pollen cohering in masses. Fruit a 1-celled 3-valved capsule, with innumerable minute seeds, appearing like fine sawdust. Perianth of 6 divisions in 2 sets; the 3 outer (sepals) mostly of the same petal-like texture and appearance as the 3 inner (petals). One of the inner set differs more or less in figure, direction, etc., from the rest, and is called the lip; only the other two taking the name of petals in the following descriptions. The lip is really the upper petal, i.e., the one next to the axis, but by a twist of the ovary of half a turn it is more commonly directed forward and brought next the bract. Before the lip, in the axis of the flower, is the column, composed of a single stamen, or in Cypripedium of two stamens and a rudiment of a third, variously coherent with or borne on the style or thick fleshy stigma; anther 2-celled; each cell containing one or more masses of pollen (pollinia) or the pollen granular (in Cypripedium). Stigma a broad glutinous surface, except in Cypripedium.—Perennials, often tuber-bearing or tuberous-rooted; some epiphytes. Leaves parallel-nerved, all alternate. Flowers often showy, commonly singular in shape, solitary, racemed, or spiked, each subtended by a bract,—in all arranged for fertilization by the aid of insects, very few capable of unaided self-fertilization.

Tribe I. EPIDENDRÆÆ. Anther terminal, erect or inclined, operculate. Pollinia smooth and waxy, 4 or 8 (2 or 4 in each cell), distinct, or those in each cell (or all in n. 3) united at base.

* Green-foliaged plants, from solid bulbs, with 1 or 2 leaves.

† Column very short; leaf solitary.

1. **Microstylis.** Flowers racemose, minute, greenish. Petals filiform.

†† Column elongated; leaves radical.

‡ Whole plant (except the flowers) green.

2. **Liparis.** Leaves 2. Raceme few-flowered. Lip flat, entire.

3. **Calypso.** Leaf solitary. Flower large, solitary. Lip saccate.

** Leafless, with coralloid roots; whole plant brownish or yellowish; flowers racemose.

4. **Corallorhiza.** Pollinia 4, in 2 pairs. Flower gibbous or somewhat spurred, and lip with 1-3 ridges; sepals and petals 1-3-nerved.

Tribe II. NEOTTIEÆ. Anthers erect upon the back of the column at the summit, or terminal and opercular. Pollinia granular or powdery, more or less cohering in 2 or 4 delicate masses, and attached at the apex to the beak of the stigma.

* Anthers without operculum, erect upon the back of the short column.

Flowers small, in spikes or racemes.

5. *Listera*. Stem from a fibrous root, 2-foliate. Lip flat, 2-lobed.
6. *Spiranthes*. Stems leafy below, from tuberous-fascicled roots. Flowers 1-3-ranked in a twisted spike. Lip embracing the column below, with 2 callosities at base.
7. *Goodyera*. Leaves radical, white-reticulated. Lip entire, free from the column, saccate, without callosities.
- ** Anther terminal, operculate, incumbent; column elongated. Stem scapose or few-leaved; flowers large, solitary or few.
8. *Arethusa*. Leaf and flower solitary. Lip bearded, its base adherent to the linear column. Pollinia 4.
9. *Calopogon*. Leaf solitary, grass-like. Lip bearded, stalked, free. Column winged at the apex. Pollinia 4.
10. *Pogonia*. More or less leafy. Lip crested, free. Column clavate. Pollinia 2.

Tribe III. OPHRYDEÆ. Anther without operculum, the cells adnate to the top of the column and often continuous with the beak of the stigma. Pollinia 2, of coarse grains united by an elastic web, each attached at base by a stalk to a viscid gland. Flower (in ours) ringent and spurred, spicate upon a leafy stem.

11. *Orchis*. The two glands or viscid disks enclosed in a common pouch.
12. *Habenaria*. The two glands naked, either approximate or widely separated.

Tribe IV. CYPRIPEDEÆ. Perfect anthers 2, lateral, the sterile one forming a dilated fleshy appendage above the terminal stigma. Pollen granular, not in masses.

13. *Cypripedium*. Stems more or less leafy. Perianth spreading; lip an inflated sac.

1. MICROSTYLIS, Nutt. ADDER'S-MOUTH.

Sepals oblong, spreading. Petals thread-like or linear, spreading. Lip auricled or ovate at base, not tubercled, entire or nearly so. Column very small, terete, with 2 teeth or auricles at the summit and the erect anther between them. Pollen-masses 4, in one row (2 in each cell), cohering by pairs at the apex, waxy, without any stalks, threads, or gland.—Low herbs, from solid bulbs, producing simple stems, which bear in our species a single leaf and a raceme of minute greenish flowers. (Name composed of μικρός, *small*, and στυλίς, *a column or style*.)

1. *M. monophyllos*, Lindl. Slender (4-6' high); leaf sheathing the base of the stem, ovate-elliptical; racemes spiked, long and slender; pedicels not longer than the flowers; lip long-pointed.—Cold wet swamps, N. B. to Ont., and northward. July. (Eu.)

2. **M. ophioglossoides**, Nutt. Leaf near the middle of the stem, ovate, clasping; raceme short and obtuse; pedicels much longer than the flowers; lip truncate-3-lobed at the summit, the middle lobe very small.—Low moist ground, N. S. to Sask. July.—Pollinia (at least sometimes) only 1 in each cell.

2. LIPARIS, Richard. TWAYBLADE.

Sepals and petals nearly equal, linear, or the latter thread-like, spreading. Lip flat, entire, often bearing 2 tubercles above the base. Column elongated, incurved, margined at the apex. Anther lid-like, terminal; pollen-masses 4, in one row (2 to each cell), slightly united in pairs, without stalk, threads, or gland.—Small, low herbs, with solid bulbs, producing 2 root-leaves and a low scape, which bears a raceme of few purplish or greenish flowers. (Name from λιπαρός, fat or shining, in allusion to the smooth or unctuous leaves.)

1. **L. Læselii**, Richard. Leaves elliptic-lanceolate or oblong, keeled; lip obovate or oblong (2" long), mucronate, yellowish-green, shorter than the linear unequal petals and sepals.—Bogs, N. S. to Sask. (Eu.)

3. CALYPSO, Salisb.

Sepals and petals nearly similar, ascending, spreading, lanceolate, pointed. Lip larger than the rest of the flower, sac-shaped, inflated (9" long), 2-pointed underneath the apex. Column broadly winged and petal-like, ovate, bearing the lid-like anther just below the apex; pollen-masses waxy, 2, each 2-parted, all sessile on a square gland.—A little bog-herb; the solid bulbs producing a single ovate or slightly heart-shaped thin leaf, as in Aplectrum, and a short (3-5' high) scape, sheathed below, bearing a large and showy (variegated purple, pink, and yellow) flower. (Name from the goddess Calypso.)

1. **C. borealis**, Salisb.—Cold bogs and wet woods, the bulbs resting in moss, with a coralloid root beneath; N. S. west and northward. May.—A very local and beautiful plant. Lip somewhat resembling that of a Lady's Slipper, woolly-hairy inside. (Eu.)

4. CORALLORHIZA, Haller. CORAL-ROOT.

Perianth somewhat ringent, oblique and gibbous or obscurely spurred at base; the oblong or lanceolate sepals and petals nearly

alike, 1-3-nerved, the upper arching; the lateral sepals ascending, their bases with that of the lip forming the gibbosity or short spur which is mostly adnate to the summit of the ovary; lip slightly adherent to the base of the 2-edged straightish column, bearing a pair of projecting ridges on the face below, spreading or recurved at the apex. Anther terminal, lid-like. Pollen-masses 4, obliquely incumbent, soft-waxy, free.—Brownish or yellowish herbs, destitute of green foliage, with much-branched and toothed coral-like root-stocks (probably root-parasitical), sending up a simple scape, with sheaths in place of leaves and bearing a raceme of rather small dull-colored flowers; fruit reflexed. (Name composed of *κοράλλιον*, coral, and *ρίζα*, root.)

§ 1. *Small spur or sac adnate to the summit of the ovary; flowers small; lip whitish or purplish, often mottled with crimson.*

1. **C. innata**, R. Brown. Plant slender, light brownish or yellowish (3-9' high), 5-12-flowered; pedicels very short; perianth 2-2½" long; lip somewhat hastately 3-lobed above the base, the lamellæ thick and rather short; spur a very small protuberance; capsule oval or elliptical (3-4" long).—Swamps and damp woods, N. S. westward. May, June. (Eu.)

2. **C. multiflora**, Nutt. Plant purplish, rather stout (9-18' high), 10-30-flowered; perianth 2½-4" long; lip deeply 3-lobed, with a short narrowed base and with prominent lamellæ; spur manifest and protuberant; capsule oblong (6-9" long), short pedicelled.—Dry woods, Atl. to Pacif. July-Sept.

5. **LISTERA**, R. Brown. TWAYBLADE.

Sepals and petals nearly alike, spreading or reflexed. Lip mostly drooping, longer than the sepals, 2-lobed or 2-cleft. Column wingless; stigma with a rounded beak. Anther borne on the back of the column at the summit, erect, ovate; pollen powdery, in 2 masses, joined to a minute gland.—Roots fibrous. Stem bearing a pair of opposite sessile leaves in the middle, and a spike or raceme of greenish or brownish-purple small flowers. (Dedicated to *Martin Lister*, an early and celebrated British naturalist.)

* Column very short; sepals ovate, reflexed; plants delicate,
4-8' high.

1. **L. cordata**, R. Brown. Leaves round-ovate, somewhat heart-shaped ($\frac{1}{2}$ –1' long); raceme smooth; *flowers minute, crowded, on pedicels not longer than the ovary; lip linear, twice as long as the sepals, 1-toothed each side at base, 2-cleft.*—Cold woods, Atl. to Pacific. June. (Eu.).

*** Column longer, arching or straightish.*

2. **L. convallarioides**, Nutt. Plant 4–9' high; leaves oval or roundish, and sometimes a little heart-shaped ($1\frac{1}{2}$ ' long); raceme loose, pubescent; pedicels slender, lip wedge-oblong, 2-lobed at the dilated apex, and 1-toothed on each side at the base, nearly twice the length of the narrowly lanceolate spreading sepals, purplish, $\frac{1}{3}$ ' long.—Damp mossy woods, Atl. to Pacific.

6. **SPIRANTHES**, Richard. LADIES' TRESSES.

Perianth somewhat ringent, oblique on the ovary; the sepals and petals all narrow, mostly erect or connivent, the three upper pieces sticking together more or less, the two lower covering the base of the lip. Lip oblong, short-stalked or sessile, the lower part involute around the column, and with a callous protuberance on each side of the base; the somewhat dilated summit spreading or recurved, crisped, wavy, or rarely toothed or lobed. Column short, oblique, bearing the ovate stigma on the front, and the sessile or short-stalked (mostly acute or pointed) 2-celled erect anther on the back. Pollen-masses 2 (one in each cell), narrowly obovate, each 2-cleft, and split into thin and tender plates of granular pollen united by elastic threads, and soon adhering at base to the narrow boat-shaped viscid gland, which is set in the slender or tapering thin beak terminating the column. After the removal of the gland, the beak is left as a 2-toothed or 2-forked tip.—Roots clustered-tuberos; stem more or less naked above, leaf-bearing below or at the base. Flowers small (ours all white or greenish-white), bent horizontally, 1–3-ranked in a spike, which is commonly more or less spirally twisted (whence the name, from *σπειρα*, a coil or curl, and *ἄθος*, flower).

** Flowers in 3 ranks, crowded in a close spike; leaves at the root and base of the stem present at the flowering season.*

1. **S. latifolia**, Torr. Low; naked stem or scape 4–9' (rarely 12') high, smooth; leaves all next the base, oblong or lance-oblong (1–4'

long, 3-9" wide), 3-5-nerved, contracted into a sheathing base; spike narrow (1-3' long); *flowers small* (2-3" long); lip quadrate-oblong, yellowish on the face, not contracted in the middle, thin, wavy-cripsed at the very obtuse or truncate apex, the small *callosities* at the base *oblong, marginal and adnate* for their whole length; gland and beak of the stigma short.—Moist banks, N.B. to Ont.

2. **S. Romanzoffiana**, Cham. Stem *leafy below and leafy-bracted above* (5-15' high); leaves varying from oblong-lanceolate to grassy-linear; spike dense, oblong or cylindrical (1-4' long); perianth curved and the summit *manifestly ringent*, pure white (4" long), the sepals and petals all connivent in the upper portion or galea; the lip *ovate-oblong, contracted below the rounded wavy-crenulate much recurved summit*, otherwise entire, the callosities at base globular and smooth; gland oblong-linear and the 2-horned *beak of the stigma short*.—High and cool bogs, Newf. west and northward; July, Aug. (Ireland.)

3. **S. cernua**, Richard. Stem *leafy below and leafy-bracted above* (6-20' high); leaves *linear-lanceolate*, the lowest elongated (4-12' long, 2-9" wide); spike cylindrical, rather dense (2-5' long) and with the white fragrant flowers either pubescent or nearly smooth; perianth horizontal or recurving (4-5" long), the *lower sepals not upturned* or connivent with the upper; lip *oblong* and very obtuse when outspread, but conduplicate or the margins much incurved, wavy-cripsed above the middle, especially at the flattish and re-curved-spreading apex, the callosities at the base prominent, nipple-shaped, somewhat hairy; gland of the stigma linear, in a *long and very slender beak*.—Common in wet places. N.S. to Ont. Sept., Oct.

7. GOODYERA, R. Br. RATTLESNAKE-PLANTAIN.

Lip sac-shaped, sessile, entire, and without callosities at base. Otherwise as *Spiranthes*.—Root of thick fibres, from a somewhat fleshy creeping root-stock, bearing a tuft of thickish petioled leaves, usually reticulated with white veining. Scape, spike, and the greenish-white small flowers usually glandular-downy. (Dedicated to *John Goodyear*, an early English botanist.)

§ 1. Lip *strongly saccate-inflated and with a short spreading or re-curved tip*; anther short, borne on a distinct filament attached to

the back of the short column, blunt; gland-bearing tip or beak of the stigma very short.

1. **G. repens**, R. Br. Small (5-8' high) and slender; leaves ovate, more or less white-reticulated (about 1' long); *flowers several, in a loose 1-sided spike*; lip with an ovate recurved tip; *sepals ovate*.—Woods, under evergreens, common northward. July. (Eu.)

2. **G. pubescens**, R. Br. Larger; leaves strongly white-reticulated; scape 6-12' high, *the numerous crowded flowers not one-sided*; tip of the *globular lip very short*; otherwise like the preceding, and too near to it.—Rich woods, Newf. to Ont.

8. **ARETHUSA**, Gronov.

Flower ringent; the lanceolate sepals and petals nearly alike, united at base, ascending and arching over the column. Lip dilated and recurved-spreading toward the summit; very slightly gibbous at base. Column adherent to the lip below, petal-like, dilated at the apex. Anther lid-like, terminal, of 2 approximate cells; pollen-masses powdery-granular, 2 in each cell.—Beautiful low herbs, consisting of a sheathed scape from a globular solid bulb, terminated usually by a single large rose-purple flower. Leaf solitary, linear, nerved, hidden in the sheaths of the scape, protruding after flowering. (Dedicated to the nymph *Arethusa*.)

1. **A. bulbosa**, L. Flower single (rarely 2), erect (1-2' long), with an entire lip recurved at the apex and bearded-crested down the face.—Bogs, Newf. to Ont.

9. **CALOPOGON**, R. Br.

Flower with the ovary or stalk not twisting, therefore presenting its lip on the upper or inner side. Sepals and petals nearly alike, lance-ovate, spreading, distinct. Lip spreading, distant from the column, raised on a narrowed base or stalk, dilated at the summit, strongly bearded along the upper side. Column free, slender, winged at the apex. Anther terminal and lid-like, sessile; pollen-masses 4 (two in each cell), of soft powdery grains, lightly connected by delicate threads.—Scape from a small solid bulb, sheathed below by the base of the grass-like leaf, naked above, bearing several

large flowers. Bracts minute. (Name composed of *καλός*, beautiful, and *πώγων*, beard, from the bearded lip.)

1. *C. pulchellus*, R. Br. Leaf linear; scape about 1° high, 2-6-flowered; flowers 1' broad, pink-purple; lip as if hinged at the insertion, beautifully bearded toward the dilated summit with white, yellow, and purple club-shaped hairs.—Bogs, Newf. to Ont.

10. POGONIA, Juss.

Flower irregular, the sepals and petals separate. Lip crested or 3-lobed. Column free, elongated, club-shaped, wingless. Anther terminal and lid-like, stalked; pollen-masses 2 (one in each cell), powdery-granular. (*Πωγωνίας*, bearded, from the lip of some of the original species.)

§ 1. *Sepals and petals nearly equal and alike, pale rose-color, sometimes white.*

1. *P. ophioglossoides*, Nutt. Root of thick fibres; stem (6-9' high) bearing a single oval or lance-oblong leaf near the middle and a smaller one or bract near the terminal flower, rarely one or two others with a flower in the axil; flower 1' long, sweet-scented; lip spatulate, appressed below to the column, beard-crested and fringed.—Bogs, Newf. to Ont. June, July. (Japan.)

11. ORCHIS, L.

Flower ringent; the sepals and petals nearly equal. Lip turned downward, coalescing with the base of the column, spurred below. Anther-cells contiguous and parallel. Pollen cohering in numerous coarse waxy grains, which are collected on a cobweb-like elastic tissue into 2 large masses (one filling each anther-cell) borne on a slender stalk, the base of which is attached to a gland or sticky disk of the stigma, the two glands contained in a common little pouch or hooded fold, placed just above the orifice of the spur. Flowers showy, in a spike.—Our species with low scape-like stems, with 1 or 2 leaves at base, from fleshy-fibrous roots. (*Ὀρχις*, the ancient name.)

1. *O. spectabilis*, L. SHOWY ORCHIS. Root of thick fleshy fibres, producing 2 oblong-obovate shining leaves (3-6' long), and a few-flowered 4 angled scape (4-7' high); bracts leaf-like, lanceolate; sepals and petals all lightly united to form the vaulted galea or

upper lip, pink-purple, the ovate undivided lip white.—Rich woods, N.B. to Ont. May.

2. *O. rotundifolia*, Pursh. Stem naked above, 1-leaved at base (5-9' high), from a slender creeping rootstock; leaf varying from almost orbicular to oblong ($1\frac{1}{2}$ -3' long); flowers rose-purple, the lip white and spotted with purple, 3-lobed, and the larger middle lobe dilated and 2-lobed or strongly notched at the summit (4-6" long), exceeding the ovate-oblong petals and sepals, and the slender depending spur. (*Habenaria rotundifolia*, *Richardson*.)—Damp woods and bogs, Q. west and northward.

12. HABENARIA, Willd. REIN-ORCHIS.

Glands or viscid disks (to which the pollen-masses are attached) naked and exposed, separate, sometimes widely so (becoming attached, some to the proboscis, others to the face or head of insects feeding upon the nectar of the spur, the pollen thus carried from one blossom to another); otherwise nearly as in true Orchis; the lateral sepals, however, mostly spreading. (Name from *habena*, a thong or rein, in allusion to the shape of the lip or spur of some species.)

§ 1. GYMNADENIA. Cells of the anther parallel and approximate, their glands therefore contiguous. (Appendages of the stigma in our species two or three and much developed, oblong or club-shaped.)

1. *H. tridentata*, Hook. Stem slender (6-12' high), with a single oblong or oblanceolate obtuse leaf below, and 2 or 3 small ones like bracts above; spike 6-12-flowered, oblong; flowers greenish or whitish, very small; lip wedge-oblong, truncate, and with 3 short teeth at the apex; the slender and slightly club-shaped spur curved upward, longer than the ovary.—Wet woods, Newf. to Ont. June, July.

§ 2. PLATANThERA. Cells of the anther sometimes parallel, more commonly divergent, so that their tapering bases and the exposed glands are more or less distant. (Root a cluster of fleshy fibres, or tuberous-thickened.)

* Flowers greenish or white, small, numerous in a close spike; spur not longer than the entire or merely notched narrow lip; anther-cells almost parallel, wholly adnate; stem leafy.

† *Spur short and sac-like; the 3 sepals and 2 narrow petals erect; glands small, rather widely separated.*

2. **H. bracteata**, R. Br. Stem 6–12' high; lower leaves obovate, the upper oblong and gradually reduced to lanceolate acute bracts 2–4 times the length of the green flowers; spike 10–30-flowered; lip oblong-linear or slightly spatulate, truncate and 2–3-toothed or lobed at the tip, more than twice the length of the white spur. (*H. viridis*, var. *bracteata*, *Reichenb.*)—Damp woods and meadows, N. B. west and far northward.

†† *Spur slender, incurved, about equalling the entire lip; lateral sepals spreading.*

3. **H. hyperborea**, R. Br. Stem very leafy (6'–2° high); leaves lanceolate, erect; spike dense (2–15' long); lower bracts lanceolate, longer than the (greenish) flowers; lip and petals lanceolate, somewhat equal, the latter spreading from the base; anther somewhat overhanging the transversely dilated stigma; glands orbicular; stalk of the pollen-masses very slender and weak.—Peat bogs and wet cold woods, Newf. west and northward. June, July. (Eu.)

4. **H. dilatata**, Gray. Resembles n. 3, but usually more slender, with narrower commonly linear leaves; flowers white; lip lanceolate from a rhomboidal-dilated base, entire, its base with the bases of the petals and sepals erect-connivent, above spreading; anther-cells almost parallel; glands approximate, large and strap-shaped, vertical, nearly as long as the pollen-mass and its short flat stalk together; stigma narrow; a trowel-shaped conspicuous beak between the bases of the anther-cells.—Cold bogs, Atl. to Pac.

** *Flowers white or greenish, numerous in a loose spike, on a naked scape, 2-leaved at base; spur longer than the narrow entire lip; anther-cells widely diverging, their narrowed beak-like bases projecting forward; stalk of the pollen-mass laterally affixed to the back of the orbicular gland, the viscous face of which looks obliquely inward.*

5. **H. Hookeri**, Torr. Leaves orbicular, spreading (3–4' broad); scape mostly naked ($\frac{1}{2}$ –1° high), bearing 10–20 upright sessile yellowish-green flowers in a strict spike; sepals ovate-lanceolate; lip lanceolate, pointed, incurved, longer than the lance-awl-shaped

petals; spur slender, acute, about the length of the ovary (nearly 1' long).—Damp woods and borders of swamps, N. Scotia to Ont.

6. *H. orbiculata*, Torr. Leaves very large (4-8' wide), orbicular, spreading flat on the ground, shining above, silvery beneath; scape bracted (1-2° high), bearing many spreading greenish-white flowers in a loose raceme; upper sepal orbicular, the lateral ovate; lip narrowly linear and slightly spatulate, obtuse, drooping, nearly thrice the length of the oblong-lanceolate and falcate obtuse petals; spur curved, slender (about 1½' long), gradually thickened toward the blunt apex, twice the length of the ovary; anther-cells strongly projecting at the free beak-like base (the glands nearly ¼' apart).—Rich woods (especially coniferous), Newf. westward.

*** (FRINGED ORCHIS.) *Flowers several or many in an open spike, with mostly foliaceous bracts; stem (rather tall) leafy; spur thread-shaped or scarcely club-shaped, longer than the fringed, cleft, or dissected lip; anther-cells widely separated and usually diverging, their narrow beak-like bases, supported by the arms of the stigma, strongly projecting forward or partly upward.*

+++ (PURPLE FRINGED-ORCHIS.) *Lip fan-shaped, 3-parted above the stalk-like base, the divisions erosely fringed; flowers purple; anther-cells widely separated, little divergent, the orbicular glands oblique; ovary contracted only at the summit; the long curving spur somewhat clavate.*

7. *H. psycodes*, Gray. Leaves oblong or lanceolate, the uppermost passing into linear-lanceolate bracts; raceme cylindrical, densely many-flowered; lower sepals round-oval, obtuse; petals wedge-obovate or spatulate, denticulate above; divisions of the spreading lip broadly wedge-shaped, many-cleft into a short fringe. Wet meadows and bogs, common; Newf. to Ont. July, Aug.—Flowers short-pedicelled, crowded in a spike of 4-10' in length, small, but very handsome, fragrant; lip short-stalked.

13. CYPRIPEDIUM, L. LADY'S SLIPPER. MOCCASIN-FLOWER.

Sepals spreading; all three distinct, or in most cases two of them united into one under the lip. Petals spreading, resembling the sepals but usually narrower. Lip a large inflated sac. Column declined; on each side a fertile stamen, with its short filament

bearing a 2-celled anther ; the pollen loose and pulpy or powdery-granular ; on the upper side a dilated-triangular, petal-like but thickish body, which answers to the fertile stamen of other Orchids, and covers the summit of the style ; stigma terminal, broad, obscurely 3-lobed, moist and roughish (not smooth and viscid as in the rest of the order). Pollen in most of our species, especially in n. 4, exposed by the conversion of the face of the anther into a viscid, varnish-like film, which adheres to whatever touches it, carrying away some of the pollen.—Root of many tufted fibres. Leaves large, many-nerved and plaited, sheathing at the base. Flowers solitary or few, large and showy. (Name composed of *Κύπρις*, *Venus*, and *πέδιον*, a sock or buskin, i.e., *Venus's Slipper*.)

§ 1. *Two of the sepals united into one under the lip.*

* *Stem leafy to the top, 1-3-flowered ; lip slipper-shaped or roundish, much inflated, horizontal, and with a rounded open orifice.*

† *Sepals and linear wavy-twisted petals brownish, pointed, longer than the lip.*

1. **C. parviflorum**, Salisb. SMALLER YELLOW L. Stem 1-2° high, leaves oval, pointed ; sepals ovate or ovate-lanceolate ; lip flattish from above, bright yellow (1' long or less) ; sterile stamen triangular.—Bogs and low woods, Newf., westward. May, June.—Flowers fragrant ; sepals and petals more brown-purple than in the next, into which it seems to pass.

2. **C. pubescens**, Willd. LARGER YELLOW L. Stem 2° high, pubescent, as are the broadly oval acute leaves ; sepals elongated-lanceolate ; lip flattened laterally, very convex and gibbous above, 1½-2' long, pale yellow.—Bogs and low woods ; same range as the last.

†† *Sepals and petals plane, rounded, white, not longer than the lip.*

3. **C. spectabile**, Salisb. SHOWY L. Downy, 2° high ; leaves ovate, pointed ; sepals round-ovate or orbicular, rather longer than the oblong petals ; lip much inflated, white, pink-purple in front (1½' long) ; sterile stamen heart-ovate.—Peat-bogs, N. S. to Ont. July.—The most beautiful of the genus.

** *Scape naked, 2-leaved at base, 1-flowered ; sepals and petals greenish, shorter than the drooping lip, which has a closed fissure down its whole length in front.*

4. *C. acaule*, Ait. STEMLESS L. Downy; leaves oblong; scape 8-12' high, with a green bract at top; sepals oblong-lanceolate, pointed, nearly as long as the linear petals; lip obovoid or oblong, rose-purple (rarely white), nearly 2' long, veiny; sterile stamen rhomboid.—Dry or moist woods; Newf., westward. May, June.

ORDER 60. IRIDACEÆ (IRIS FAMILY).

Herbs, with equitant 2-ranked leaves, and regular or irregular perfect flowers; the divisions of the 6-cleft petal-like perianth convolute in the bud in 2 sets, the tube coherent with the 3-celled ovary, and 3 distinct or monadelphous stamens, alternate with the inner divisions of the perianth, with extrorse anthers.—Flowers from a spathe of 2 or more leaves or bracts, usually showy. Style single, usually 3-cleft; stigmas 3, opposite the cells of the ovary, or 6 by the parting of the style-branches. Capsule 3-celled, loculicidal, many-seeded. Seeds anatropous; embryo straight in fleshy albumen. Rootstocks, tubers, or corms mostly acrid.

* Branches of the style (or stigmas) opposite the anthers.

1. *Iris*. Outer divisions of the perianth recurved, the inner erect; stigmas petal-like.

** Branches of the style alternate with the anthers. Perianth regular.

2. *Sisyrinchium*. Root fibrous. Filaments united. Stigmas thread-like.

1. IRIS, Tourn. FLOWER-DE-LUCE.

Perianth 6-cleft; the tube more or less prolonged beyond the ovary; the 3 outer divisions spreading or reflexed, the 3 inner smaller, erect. Stamens distinct; the oblong or linear anthers sheltered under the overarching petal-like stigmas (or rather branches of the style, bearing the true stigma in the form of a thin lip or plate under the apex); most of the style connate with the tube of the perianth. Capsule 3-6-angled, coriaceous. Seeds depressed-flattened, usually in 2 rows in each cell.—Perennials, with sword-shaped or grassy leaves, and large showy flowers; ours with creeping and more or less tuberous rootstocks. (*Ἴρις*, the rainbow, anciently applied to this genus on account of its bright and varied colors.)

* *Stems leafy and rather tall (1-3° high), from thickened rootstocks, often branching; tube of the perianth shorter than the divisions, which are beardless and crestless, the erect inner ones (petals) much smaller than the outer.*

† *Flowers violet-blue, variegated with green, yellow or white, and purple-veined.*

1. **I. versicolor**, L. **LARGER BLUE FLAG.** Stem stout, angled on one side; leaves sword-shaped ($\frac{3}{4}$ ' wide); ovary obtusely triangular with the sides flat; flowers ($2\frac{1}{2}$ –3' long) short-peduncled, the funnel-form tube shorter than the ovary; capsule oblong, turgid, with rounded angles.—Wet places, Newf. to Ont. May, June.

2. **SISYRINCHIUM**, L. **BLUE-EYED GRASS.**

Perianth 6-parted; the divisions alike, spreading. Stamens monadelphous to the top. Stigmas thread-like. Capsule globular, 3-angled. Seeds globular.—Low slender perennials, with fibrous roots, grassy or lanceolate leaves, mostly branching 2-edged or winged stems, and fugacious umbelled-clustered small flowers from a 2-leaved spathe. (A meaningless name, of Greek origin.)

1. **S. angustifolium**, Mill. Scape (4–12' high) winged or wingless, simple, the spathe solitary and terminal, its outer bract more or less elongated; flowers delicate blue, changing to purplish (rarely white), the divisions of the perianth more or less notched, bristle-pointed and ciliate; mature seeds globose, large ($\frac{1}{2}$ " broad), faintly pitted or nearly smooth. (S. Bermudiana, var. mucronatum, Gray, excl. descr.)—Moist meadows, etc., among grass; common everywhere. June–August.

2. **S. anceps**, Cav. Scape (6–18' high) usually branching and bearing 2 or more peduncled spathes; seeds more ovate, much smaller, deeply pitted. (S. Bermudiana, var. anceps, Gray, excl. descr.)—Similar localities; common.

ORDER 61. **LILIACEÆ** (LILY FAMILY).

Herbs, or rarely woody plants, with regular and symmetrical almost always 6-androus flowers; the perianth not glumaceous, free from the chiefly 3-celled ovary; the stamens one before each of its divisions or lobes (i.e. 6, in one instance 4), with 2-celled anthers; fruit a few-many-seeded pod or berry; the small embryo enclosed in copious albumen. Seeds anatropous or amphitropous (orthotropous in Smilax). Flowers not from a spathe, except in Allium; the outer and inner ranks of the perianth colored alike (or nearly so) and generally similar, except in Trillium.

SUB-ORDER I. **Liliaceæ proper.** Never climbing by tendrils. Very rarely dioecious. Seeds anatropous or amphitropous.

SERIES A. Floral bracts scarious. Stamens perigynous on the usually withering-persistent nerved perianth; anthers introrse. Style undivided, mostly persistent. Fruit a loculicidal capsule or a berry. Leaves transversely veined.

* Leafy stems from running rootstocks; fruit a berry; leaves cordate to lanceolate; flowers white; pedicels jointed.

† Perianth gamophyllous, 6-lobed.

1. **Polygonatum.** Stem leafy. Flowers axillary; perianth cylindrical.

†† Perianth-segments distinct, small, spreading, persistent.

2. **Smilacina.** Stem simple, leafy. Flowers 6-parted, racemose or paniculate.

3. **Maianthemum.** Stem low, 2-leaved. Flowers 4-merous, racemose.

SERIES B. Floral bracts none or foliaceous. Stamens hypogynous or at the base of the distinct segments of the deciduous perianth (persistent in n. 11); anthers extrorse or dehiscent laterally. Style undivided, deciduous (stigmas sessile and persistent in n. 11). Fruit a loculicidal capsule or a berry. Veinlets anastomosing (transverse in n. 4, 5-7).

* Fruit a berry; stem or scape from a creeping rootstock; leaves broad, alternate or radical; flowers narrowly campanulate.

4. **Streptopus.** Stem leafy. Flowers axillary, on bent pedicels. Anthers sagittate, acute; filaments deltoid or subulate.

5. **Clintonia.** Flowers umbellate on a scape, few or many.

** Fruit a capsule.

† Stems leafy, from a short or creeping rootstock; flowers few, solitary, pendulous; capsule few-seeded.

6. **Uvularia.** Stem terete. Leaves perfoliate. Flowers terminal. Capsule truncate, 3-lobed.

7. **Oakesia.** Stem angled. Leaves sessile. Flowers opposite the leaves. Capsule acutely 3-winged.

†† Stem or scape from a bulb or corm; capsule many-seeded.

8. **Erythronium.** Scape from a solid bulb, with a pair of leaves. Flower solitary. Seeds angled, obovoid.

9. **Lilium.** Stem leafy from a scaly bulb. Seeds horizontal, flattened.

*** Fruit a berry; stem from a tuber-like rootstock, bearing 1 or 2 whorls of leaves; flowers terminal; stigmas sessile.

10. **Medeola.** Leaves in 2 whorls. Flowers umbellate. Perianth-segments similar, colored, deciduous.

11. **Trillium.** Leaves (3) in a terminal whorl. Flower solitary; outer sepals leaf-like, persistent.

1. **POLYGONATUM**, Tourn. SOLOMON'S SEAL.

Perianth cylindrical-oblong, 6-lobed at the summit; the 6 stamens inserted on or above the middle of the tube, included; anthers introrse. Ovary 3-celled, with 2-6 ovules in each cell; style slender, deciduous by a joint; stigma obtuse or capitate, obscurely 3-lobed. Berry globular, black or blue; the cells 1-2-seeded.—Perennial herbs, with simple erect or curving stems, from creeping thick and knotted rootstocks, naked below, above bearing nearly sessile or half-clasping nerved leaves, and axillary nodding greenish flowers; pedicels jointed near the flower. (The ancient name, composed of *πολύς*, *many*, and *γόνυ*, *knee*, alluding to the numerous joints of the rootstock and stem.)—Ours are alternate-leaved species, the stem terete or scarcely angled when fresh.

1. **P. biflorum**, Ell. SMALLER SOLOMON'S SEAL. Glabrous, except the ovate-oblong or lance-oblong *nearly sessile leaves*, which are commonly *minutely pubescent as well as pale or glaucous underneath*; stem slender (1-3° high); *peduncles 1-3- but mostly 2-flowered*; perianth 4-6" long; *filaments papillose-roughened*, inserted toward the summit of the perianth.—Wooded hillsides, N. B. to Ont.

2. **SMILACINA**, Desf. FALSE SOLOMON'S SEAL.

Perianth 6-parted, spreading, withering-persistent (white). Stamens 6, inserted at the base of the divisions; filaments slender, anthers short, introrse. Ovary 3-celled, with 2 ovules in each cell; style short and thick; stigma obscurely 3-lobed. Berry globular, 1-2-seeded.—Perennial herbs, with simple stems from creeping or thickish rootstocks, alternate nerved mostly sessile leaves, and white, sometimes fragrant flowers in a terminal and simple or compound raceme. (Name a diminutive of *Smilax*, to which, however, these plants bear little resemblance.)

* *Flowers on very short pedicels in a terminal racemose panicle; stamens exceeding the small (1" long) segments; ovules collateral; rootstock stout, fleshy.*

1. **S. racemosa**, Desf. FALSE SPIKENARD. Minutely downy (1-3° high); leaves numerous, oblong or oval-lanceolate, taper-pointed, ciliate, abruptly somewhat petioled; berries pale red, speckled with purple, aromatic.—Moist coves, N. S. to Sask.

**** Flowers larger (2-3" long), on solitary pedicels in a simple few-flowered raceme; stamens included; ovules not collateral; rootstock rather slender.**

2. *S. stellata*, Desf. Plant (1° high or less) nearly glabrous, or the 7-12 oblong-lanceolate leaves minutely downy beneath when young, slightly clasping; raceme sessile or nearly so; berries blackish.—Moist banks, Lab. and westward. (Eu.)

3. *S. trifolia*, Desf. Glabrous, dwarf (2-6' high); leaves 3 (sometimes 2 or 4), oblong, tapering to a sheathing base; raceme peduncled; berries red.—Cold bogs, Lab. to Pac. (Sib.)

3. MAIANTHEMUM, Wigg.

Perianth 4-parted, with as many stamens. Ovary 2-celled; stigma 2-lobed. Otherwise as in *Smilacina*.—Flowers solitary or fascicled, in a simple raceme upon a low 2-3-leaved stem. Leaves ovate- to lanceolate-cordate. (Name from *Mainus*, May, and *ἄνθεμον*, a flower.)

1. *M. Canadense*, Desf. Pubescent or glabrous (3-5' high); leaves lanceolate to ovate, cordate at base with a very narrow sinus, sessile or very shortly petioled; perianth-segments 1" long. (*Smilacina bifolia*, var. *Canadensis*, Gray.)—Moist woods, Lab. to R. Mts. May.

4. STREPTOPUS, Michx. TWISTED-STALK.

Perianth recurved-spreading from a bell-shaped base, deciduous; the 6 distinct sepals lanceolate, acute, the 3 inner keeled. Anthers arrow-shaped, extrorse, fixed near the base to the short flattened filaments, tapering above to a slender entire or 2-cleft point. Ovary with many ovules in each cell; style and sometimes the stigmas one. Berry red, roundish-ovoid, many-seeded.—Herbs, with rather stout stems from a creeping rootstock, forking and divergent branches, ovate and taper-pointed round-clasping membranaceous leaves, and small (extra-) axillary flowers, either solitary or in pairs, on slender thread-like peduncles, which are abruptly bent or contorted near the middle (whence the name, from *στρεπτός*, twisted, and *πούς*, foot or stalk).

1. *S. amplexifolius*, DC. Stem 2-3° high, glabrous; leaves very smooth, glaucous underneath, strongly clasping; flower greenish-

white (4-6" long) on a long, abruptly bent peduncle; anthers tapering to a slender entire point; *stigma* entire, truncate.—Cold moist woods, Lab. to Pac. June. (Eu.)

2. *S. roseus*, Michx. Lower leaves green both sides, finely ciliate, and the branches sparingly beset with short bristly hairs; flower rose-purple (3-4" long), more than half the length of the slightly bent peduncle; anthers 2-horned; *stigma* 3-cleft.—Cold damp woods, Lab. to R. Mts. May.

5. CLINTONIA, Raf.

Perianth of 6 separate sepals, bell-shaped, lily-like, deciduous; the 6 stamens inserted at their base. Filaments long and thread-like; anthers linear or oblong, extrorsely fixed by a point above the base, the cells opening down the margins. Ovary ovoid-oblong, 2-3-celled; style long; stigmas 2 or 3, or in ours united into one. Berry few-many-seeded.—Short-stemmed perennials, with slender creeping rootstocks, bearing a naked peduncle sheathed at the base by the stalks of 2-4 large oblong or oval ciliate leaves; flowers rather large, umbelled, rarely single. (Dedicated to *De Witt Clinton*.)

1. *C. borealis*, Raf. Scape and leaves 5-8' long; umbel 3-6 flowered; perianth greenish-yellow, somewhat downy outside (3-4" long); berry ovoid, blue; ovules 20 or more.—Cold moist woods, Lab. to Sask.

6. UVULARIA, L. BELLWORT.

Perianth narrowly bell-shaped, lily-like, deciduous; the 6 distinct sepals spatulate-lanceolate, acuminate, obtusely gibbous at base, with a deep honey-bearing groove within bordered on each side by a callus-like ridge. Stamens much shorter, barely adherent to their base; anthers linear, much longer than the filaments, adnate and extrorse, but the long narrow cells opening laterally. Style deeply 3-cleft; the divisions stigmatic along the inner side. Capsule truncate, coriaceous, 3-lobed, loculicidal at the summit. Seeds few in each cell, obovoid, with a thin white aril.—Stems rather low, terete, from a short rootstock with fleshy roots, naked or scaly at base, forking above, bearing oblong perfoliate flat and membranaceous leaves with smooth margins, and yellowish drooping

flowers, in spring, solitary on terminal peduncles. (Name "from the flowers hanging like the *uvula*, or palate.")

1. *U. grandiflora*, Smith. Yellowish-green, not glaucous; stem naked or with a single leaf below the fork; leaves whitish-pubescent beneath, usually somewhat acuminate; perianth-segments smooth within or nearly so (12-18" long); stamens exceeding the styles, obtusely tipped; capsule obtusely lobed. (*U. flava*, Smith.)—Rich woods, Q. and Ont.

7. OAKESIA, Watson.

Flowers resembling those of *Uvularia*, but the segments obtuse or acutish, carinately gibbous and without ridges within. Capsule membranous, elliptical, acutish at each end or shortly stipitate, triquetrous and acutely winged, very tardily dehiscent. Seeds globose, with a very tumid spongy rhaphe.—Stem acutely angled, from a slender creeping rootstock, with sessile clasping leaves scabrous on the margin, and 1 or 2 flowers terminal on slender peduncles but soon appearing opposite to the leaves by the growth of the branches. (Dedicated to *William Oakes*.)

1. *O. sessilifolia*, Watson. Leaves lance-oblong, acute at each end, pale, glaucous beneath, sessile or partly clasping; sepals 7-12" long; anthers obtuse; capsule short-stipitate, 6-10" long. (*Uvularia sessilifolia*, L.)—Low woods, Q. to Ont.

8. ERYTHRONIUM, L. DOG'S-TOOTH VIOLET.

Perianth lily-like, of 6 distinct lanceolate sepals, recurved or spreading above, deciduous, the 3 inner usually with a callous tooth on each side of the erect base, and a groove in the middle. Filaments 6, awl-shaped; anthers oblong-linear, continuing erect. Style elongated. Capsule obovate, contracted at base, 3-valved, loculicidal. Seeds rather numerous, ovoid, with a loose membranaceous tip.—Nearly stemless herbs, with two smooth and shining flat leaves tapering into petioles and sheathing the base of the commonly one-flowered scape, rising from a deep solid-scaly bulb. Flowers rather large, nodding, in spring. (The Greek name for the purple-flowered European species, from *ἐρυθρός*, red.)

1. *E. Americanum*, Ker. YELLOW ADDER'S-TONGUE. Scape 6-9' high; leaves elliptical-lanceolate, pale green, mottled with

purplish and whitish and commonly minutely dotted; *perianth light yellow*, often spotted near the base (10-20" long); style club-shaped; *stigmas united*.—Rich ground, N. Brunswick to Ont.

9. LILIUM, L. LILY.

Perianth funnel-form or bell-shaped, colored, of 6 distinct sepals, spreading or recurved above, with a honey-bearing furrow at the base, deciduous; the 6 stamens somewhat adhering to their bases. Anthers linear, extrorsely attached near the middle to the tapering apex of the long filament, which is at first included, at length versatile; the cells dehiscent by a lateral or slightly introrse line. Style elongated, somewhat club-shaped; stigma 3-lobed. Capsule oblong, containing numerous flat and horizontal (depressed) soft-coated seeds densely packed in 2 rows in each cell. Bulbs scaly, producing simple stems, with numerous alternate-scattered or whorled narrow sessile leaves, and from one to several large and showy flowers; in summer. (The classical Latin name, from the Greek λειριον.)

* *Flowers erect, the sepals narrowed below into claws;*
bulbs not rhizomatous.

1. **L. Philadelphicum, L.** WILD ORANGE-RED LILY. WOOD LILY. Stems 2-3° high; *leaves linear-lanceolate, whorled or scattered*; flowers (2-4' long) 1-3, open-bell-shaped, *reddish-orange* spotted with purplish inside; the lanceolate sepals not recurved at the summit; bulb of thick fleshy jointed scales.—Dry or sandy ground, Q., westward.

** *Flowers nodding, the sepals sessile; bulbs rhizomatous.*

2. **L. Canadense, L.** WILD YELLOW LILY. Stem 2-7° high; *leaves remotely whorled, lanceolate, strongly 3-nerved, the margins and nerves rough*; flowers few (2-3' long), long-peduncled, oblong-bell-shaped, the *sepals recurved-spreading above*, yellow or orange, usually spotted with brown.—Moist meadows and bogs, N. S. to Ontario.

10. MEDEOLA, Gronov. INDIAN CUCUMBER-ROOT.

Perianth recurved, the 3 sepals and 3 petals oblong and alike (pale greenish-yellow), deciduous. Stamens 6; anthers shorter than the slender filaments, oblong, extrorsely attached above the

base, but the line of dehiscence of the closely contiguous parallel cells lateral or slightly introrse. Stigmas, or styles, stigmatic down the upper side, recurved-diverging from the globose ovary, long and thread-form, deciduous. Berry globose (dark purple), 3-celled, few-seeded.—A perennial herb, with a simple slender stem (1-3' high, clothed with flocculent and deciduous wool), rising from a horizontal and tuberous white rootstock (which has the taste of cucumber), bearing near the middle a whorl of 5-9 obovate-lanceolate and pointed, sessile, lightly parallel-ribbed and netted-veiny, thin leaves; also another of 3 (rarely 4 or 5) much smaller ovate ones at the top, subtending a sessile umbel of small recurved flowers. (Named after the sorceress *Medea*, for its supposed great medicinal virtues.)

1. *M. Virginiana*, L.—Rich damp woods, N. S. to Ont. June.

11. TRILLIUM, L. WAKE ROBIN. BIRTHROOT.

Sepals 3, lanceolate, spreading, herbaceous, persistent. Petals 3, larger, withering in age. Stamens 6; anthers linear, on short filaments, adnate, usually introrse; the cells opening down the margins. Stigmas sessile, awl-shaped or slender, spreading or recurved above, persistent, stigmatic down the inner side. Ovary 3-6-angled. Berry ovate, usually 6-angled or -winged, 3-celled (purple or red). Seeds ovate, horizontal, several in each cell.—Low perennial herbs, with a stout and simple stem rising from a short and præmorse tuber-like rootstock, naked, bearing at the summit a whorl of 3 ample, commonly broadly ovate, more or less ribbed but netted-veined leaves, and a terminal large flower; in spring. (Name from *tripulum*, triple; all the parts being in threes.)—Monstrosities are not rare with the calyx and sometimes petals changed to leaves, or the parts of the flower increased in number.

* Ovary and fruit 6-angled and more or less winged.

† Flower pedicelled; connective narrow, not produced; leaves subsessile.

‡ Pedicel longer than the flower; filament shorter than the anther.

1. *T. erectum*, L. Leaves very broadly rhombic ($2\frac{1}{2}$ -6' wide), shortly acuminate; pedicel (1-3' long) usually more or less inclined or declinate; petals ovate to lanceolate (9-18" long), brown-purple or

often white or greenish or pinkish ; stamens equalling or exceeding the stout distinct spreading or recurved stigmas ; fruit ovate, 1' long, reddish.—Rich woods, N. Scotia to Ont. Flowers ill-scented.

2. **T. grandiflorum**, Salisb. Leaves less broadly rhombic-ovate ($1\frac{1}{2}$ –4' wide) ; pedicel erect or ascending ; petals oblanceolate, often broadly so ($1\frac{1}{2}$ –2 $\frac{1}{2}$ ' long), white turning rose-color or marked with green ; stamens with stout filaments (persistently green about the fruit) and anthers, exceeding the very slender erect or suberect and somewhat coherent stigmas ; fruit globose, $\frac{1}{2}$ –1' long.—Rich woods, Q. and Ont.

†† Pedicel short, recurved or strongly declinate ; filaments slender, about equalling the anther.

3. **T. cernuum**, L. Leaves very broadly rhombic-ovate (2–4' broad) ; petals white or pink, ovate to oblong-lanceolate (6–12" long), wavy, recurved-spreading ; stamens with short anthers, shorter than the stout recurved distinct stigmas ; fruit ovate.—Moist woods, N.S. to Ont.

** Ovary and fruit 3-lobed or angled, not winged ; filaments slender, about equalling the anthers ; pedicel erect or inclined ; leaves petiolate.

4. **T. erythrocarpum**, Michx. PAINTED T. Leaves ovate, taper-pointed ; petals ovate or oval-lanceolate, pointed, wavy, widely spreading, white painted with purple stripes at the base, shorter than the peduncle ; fruit broad-ovate, obtuse, 7–9" long.—Cold damp woods and bogs, N.S. to Ont.

ORDER 62. ARACEÆ (ARUM FAMILY).

Plants with acrid or pungent juice, simple or compound often veiny leaves, and flowers crowded on a spadix, which is usually surrounded by a spathe.—Floral envelopes none, or of 4–6 sepals. Fruit usually a berry. Seeds with fleshy albumen, or none, but filled with the large fleshy embryo. A large family, chiefly tropical. Herbage abounding in slender raphides.—The genuine Araceæ have no floral envelopes, and are almost all monœcious or dioœcious ; but the genera of the second section, with more highly developed flowers, are not to be separated.

* Spathe surrounding or subtending the spadix ; flowers naked, i.e., without perianth.

1. **Arisæma.** Flowers monœcious or diœcious, covering only the base of the spadix.
2. **Calla.** Flowers perfect (at least the lower ones), covering the whole of the short spadix. Spathe open and spreading.
- ** Spathe surrounding the spadix in n. 3, none or imperfect in the rest; flowers with a calyx or perianth and perfect, covering the whole spadix.
3. **Symplocarpus.** Spadix globular, in a fleshy shell-shaped spathe. Stemless.

1. **ARISÆMA**, Martius. INDIAN TURNIP. DRAGON ARUM.

Spathe convolute below and mostly arched above. Flowers monœcious or by abortion diœcious, covering only the base of the spadix, which is elongated and naked above. Floral envelopes none. Sterile flowers above the fertile, each of a cluster of almost sessile 2-4-celled anthers, opening by pores or chinks at the top. Fertile flowers consisting each of a 1-celled ovary, tipped with a depressed stigma, and containing 5 or 6 orthotropous ovules erect from the base of the cell; in fruit a 1-few-seeded scarlet berry. Embryo in the axis of albumen.—Low perennial herbs, with a tuberous rootstock or corm, sending up a simple scape sheathed with the petioles of the simple or compound veiny leaves. (Name from *apic*, a kind of *arum*, and *aiua*, *blood*, from the spotted leaves of some species.)

1. **A. triphyllum**, Torr. INDIAN TURNIP. *Leaves mostly 2, divided into 3 elliptical-ovate pointed leaflets; spadix mostly diœcious, club-shaped, obtuse, much shorter than the spathe, which is flattened and incurved-hooded at the ovate-lanceolate, pointed summit.*—Rich woods, N. S. to Ont. May.—Corm turnip-shaped, wrinkled, farinaceous, with an intensely acrid juice; spathe with the petioles and sheaths green, or often variegated with dark purple and whitish stripes or spots.

2. **CALLA**, L. WATER ARUM.

Spathe open and spreading, ovate (abruptly pointed, the upper surface white), persistent. Spadix oblong, entirely covered with flowers; the lower perfect and 6-androus; the upper often of stamens only. Floral envelopes none. Filaments slender; anthers 2-celled, opening lengthwise. Ovary 1-celled, with 5-9 erect anatropous ovules; stigma almost sessile. Berries (red) distinct, few-seeded. Seeds with a conspicuous rhaphe and an embryo

nearly the length of the hard albumen.—A low perennial herb, growing in cold bogs, with a long creeping rootstock, bearing heart-shaped long-petioled leaves, and solitary scapes. (An ancient name, of unknown meaning.)

1. *C. palustris*, L.—Cold bogs, N.S. west and northward. June.—Seeds surrounded with jelly. (Eu.)

3. SYMPLOCARPUS, Salisb. SKUNK CABBAGE.

Spathe hooded-shell-form, pointed, very thick and fleshy, decaying in fruit. Spadix globular, short-stalked, entirely and densely covered with perfect flowers, their 1-celled or abortively 2-celled ovaries immersed in the fleshy receptacle. Sepals 4, hooded. Stamens 4, opposite the sepals, with at length rather slender filaments; anthers extrorse, 2-celled, opening lengthwise. Style 4-angled and awl-shaped; stigma small. Ovule solitary, suspended, anatropous. Fruit a globular or oval mass, composed of the enlarged and spongy spadix, enclosing the spherical seeds just beneath the surface, which is roughened with the persistent fleshy sepals and pyramidal styles. Seeds filled by the large globular and fleshy corm-like embryo, which bears one or several plumules at the end next the base of the ovary; albumen none.—Perennial herb, with a strong odor like that of the skunk, and also somewhat alliaceous; a very thick rootstock, bearing a multitude of long and coarse fibrous roots and a cluster of very large and broad entire veiny leaves, preceded in earliest spring by the nearly sessile spathes, which barely rise out of the ground. (Name from *συμπλοκή*, *connection*, and *καρπός*, *fruit*, in allusion to the coalescence of the ovaries into a compound fruit.)

1. *S. foetidus*, Salisb. Leaves ovate, cordate, becoming 1-2° long, short-petioled; spathe spotted and striped with purple and yellowish-green, ovate, incurved; fruit (in autumn) 2-3' in diam., in decay shedding the bulblet-like seeds, which are 4-6" long.—Bogs and moist grounds, N. Scotia to Ont.

l herb,
g heart-
ancient

thward.

E.

decay-
densely
2-celled
hooded.

der fila-

Style

pended,

the en-

eneath

r sepals

l fleshy

the end

b, with

aceous;

coarse

e veiny

pathes,

ch, con-

of the

g 1-2°

le and

diam.,

ong.—